

AVIATION WEEK

A MCGRAW-HILL PUBLICATION

NOV. 21, 1949

WHEN DAYLIGHT VISIBILITY...

IS $\frac{3}{8}$ MILE...

COCKPIT VISIBILITY IS ONE MILE...



with



L-M High Intensity Runway Lighting

Higher payloads and increasing traffic demand ever more attention to accuracy and speed in landings and departures, and place greater demands for safety on pilots, airlines, and airports. When daylight visibility is $\frac{3}{8}$ mile, L-M High Intensity Runway Lighting increases cockpit visibility to a full mile, giving the pilot the best possible visual delineation of the runway under all conditions. Perhaps that's one reason why L-M lights more runways than do all other high intensity systems combined. Get full information from the nearest L-M office or Airport Lighting Division, Line Material Company, East Stroudsburg, Pa.

THE FAMOUS L-M HIGH INTENSITY RUNWAY LIGHT

Its extreme intensity of 180,000 beam candlepower is possible only because the L-M controllable beam eliminates glare and gives maximum penetration of fog, rain, dust, even daylight snow! Practical, rugged, dependable operation.



FOR SMALLER AIRPORTS... and secondary runways and taxiways at major parts... L-M Medium Intensity unit.

Applies the directed beam principle on a smaller scale. Over 4000 beam cp with 45 watt lamp. Available in a "package" with complete equipment and control unit, about \$1 per runway-foot.

LINE MATERIAL Airport Lighting



HUNT OF NORTHWEST AIRLINES new, double-deck Boeing Stratocruisers, for service coast-to-coast, to Hawaii, Alaska and the Coast. Progressive Northwest Airlines leads in putting Stratocruisers into combined domestic and foreign operation. Eighty of these great new ships are lubricated exclusively with Texaco Aircraft Engine Oil. (as are the engines of all Northwest planes.)



Northwest adds Stratocruisers

New luxury ships,
like all
Northwest Airlines'
planes, lubricated
with Texaco Aircraft
Engine Oil.

BETTER PERFORMANCE, AS PROMISED—that's why Northwest and other leading airlines rely on Texaco Aircraft Products and Lubrication Engineering Service. That's also why —

More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.

And Texaco Lubrication Engineering Service has done it, and

is doing it... an outstanding job of helping airlines simplify their lubrication and maintenance procedures... increase efficiency and reduce costs.

Get the full story of how Texaco can help your operation. Just call the nearest of the more than 2500 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, Aviation Division, 155 East 42nd Street, New York 17, N. Y.



TEXACO Lubricants and Fuels
FOR THE AVIATION INDUSTRY

WHO'S WHERE

Changes

■ **New President—Stanley J. McCaboon** has been elected president of Alaska Airlines, Inc. He is a member of McCaboon and Norlett, company counsel.
■ **New Appointment—Nathaniel A. Ault** has been appointed Joseph M. Douglas chief technical engineer. He was formerly in the industrial engineering department of Douglas Aircraft, Inc. J. J. Mellett, formerly personnel sales manager for Delta Airlines, is a new traffic and sales manager with Texas Airways, Inc. Louis A. Chert has taken the newly-created post of union shop manager with Northwest Airlines. He was previous traffic manager for PAA. Herbert E. Tate has become corporate manager in the New York area for KLM Royal Dutch Airlines. He was formerly chief representative for Air Export International in New York.

Michael J. Wachtel is now eastern regional director of public relations for American Airlines. He headquarters in New York. Carl W. Luffel is factory manager for Van Dusen Industries, Inc., in Los Angeles. Joseph H. Moore has become plant superintendent. Ferry Airlines Co. Ltd. named Robert T. O'Brien deputy chairman. A. V. Fox Canada Ltd. appointed Walter N. Dunbar to the newly-created post of director of manufacturing. Alfred J. Baum, formerly director of schedules and traffic for Transair International Airways, is now traffic manager for Servair Flight Forwarding Corp. Glenn H. Edgemoor is waste manager for Jack & House Farmington Industries, Inc. John Dick Adams has become an aircraft sales representative for The Ebbco Co., Inc.

Mark J. Middle, regional representative for Lockwood Airlines, Fort Worth, became waste representative of Lockheed Aircraft Service International in D. C.

■ **New Director—Ray F. Johnson**, vp. of Motor Chain Co., a Long Beach division, has been appointed administrative assistant to G. A. Sullivan, executive vp. of Ingle-Warner Corp. He also is a corporate director.

Capt John Jay McUSIN, has been appointed industrial representative in Europe of the National Advisory Council, in St. Augustine, Fla. He will assume an office in Paris. He served NACA in the same capacity from 1951 to 1948 when the European office was closed.

■ **New Director—Mervyn W. Smith**, president of the Builders Licensing Works, has been elected a director of the Washington Electric City.

Elections and Honors

■ **Two Honored—Dr. Irving Langmuir**, associate director of the General Electric Research Laboratory, has received the Macmillan Medal, awarded annually by the Society Française des Electriciens. Jack Bates, president of Continental Motors, Inc., is the newly elected president of the Aero Club of Michigan.

INDUSTRY OBSERVER

■ **U. S. Air Force** will offer \$7.6 million worth of modification business to North American, TENSAC and Wright either firm in its proposal to modernize and evaluate 700 North American T-6 medium (formerly AT-6). An Materiel Command at Wright Field recently notified USAF headquarters approval to spend the money.

■ **First U. S. experience** in jet transport operation will probably come from a special project now being set up by USAF to use a North American B-45 bomber on a piston jet cargo run. The four jet 500 mph, B-45 can carry a 10,000 lb. payload. Results of the USAF experiment would be made available to all U. S. aircraft manufacturers and airlines.

■ **North American** has submitted a proposal to USAF for a modernization program on its twin-engine B-25 bomber to equip it to meet two-engine jet requirements. USAF has been interested in buying a new design competition for two-engine fighters but in practice has been buying "off the shelf" planes like the Convairliner in its T-29 version. North American's proposal would provide two-engine fighters at a small fraction of the cost of a newly designed plane.

■ **Lockheed Aircraft Corp.** has given up on the L-949 elongated version of the Constellation used as military cargo and commercial air coach market. The L-949 would have had a fuselage 12 ft longer than the current L-949 now in production at Burbank. Lockheed has decided to let the Constellation to keep its line busy through 1951 and has a number of prospects interested in the first L-949 models returned by customers who are buying later model Consts.

■ **Douglas AD-3 Skykites** piloted by a Navy student recently took off from the Charleston, E. I., airport with its wings still folded for easier storage. The AD-3 took off in 1950 at and gained 250 ft. altitude before taking off to the left and lifting a change of times. The pilot landed.

■ **The Navy** has equipped a Lockheed T2V for airborne thunderstorm research and is working on the program begun by American Airlines with its Alpha and Gamma research planes under Navy contract. Air Force and Weather Bureau have been cooperating in thunderstorm work using ground radar equipment but the Navy believes the airborne research is more productive and accurate.

■ **Recommendation** against use of wing flaps in turbulent air is being elevated by Douglas Aircraft Co. to units of DC-4s and DC-4s with notice that recommendations is so intended as to apply to any other aircraft airplane designed under conventional requirements and flight conditions. It is pointed out that flaps and aileron structure are designed for approach conditions in which shock and gusts are considered and are not stressed to take the heavier gust loads for which the rest of the airplane structure is built. As the crest flaps were strengthened for use in gust conditions for which the rest of the airplane is stressed, it would put an additional load on the other fuselage and tail. This would require beefing up of these parts of the airplane.

■ **Pratt & Whitney** Co. of Mansfield is providing its landing gear sub-assemblies for the Northing C-125A and C-125D transport Radson to be equipped in Arctic remote places.

■ **Capital Airlines** is due to get delivery of its first three Super DC-3s from Douglas next April, May and June. These may be the last scheduled airline planes to be operated with the Goodyear controlled landing gear in the country. The planes will be delivered with the landing wheels in ground operation. Gear is expected to enable Capital to get Super DC-3s into several small airfields which might be equipped without it.

■ **Proposed CAR amendment** on increasing strength of safety belts is meeting with opposition from airline engineers, who contend that their past operating experience has indicated no need for increasing the strength. Changeover would require modification of seating, berths and attachment fittings. Repair for two year interval in which to replace present belt assemblies in transports, if the change is approved, has been made to CAB.

MICRO SWITCH Improves BZ-R31 Switch

(AN 3210-1)

Molded Insert Terminals of Revised BZ-R31



View showing terminals of new design of MICRO BZ-R31 (AN3210-1) switch. Note the better wiring space - also note the troublesome capacitor has been eliminated.

Improved MICRO BZ-R31 (AN3210-1) switch



MICRO "T" plunger switch with same new design of terminals as BZ-R31.

Improved MICRO BZ-R31 (AN3210-1)



MICRO split control switch has also been improved with molded insert terminal connections.

NEW



MICRO...
First name in precision switches

Improved form of

MICRO BZ-R31 (AN3210-1) switch;
full interchangeability with all MICRO BZ-R31 (AN3210-1) switches of earlier design.

MICRO SWITCH again demonstrates leadership in the design and development of precision switches for the aviation industry as the announcement of an improved design of terminals on the BZ-R31 (AN3210-1) switch.

In its new form, this improved BZ-R31 (AN3210-1) switch offers three advantages: more rugged construction of terminals with better electrical spacing and elimination of troublesome terminal separation; plus full interchangeability with the thousands of MICRO BZ-R31 (AN3210-1) switches of earlier design now in use.

This switch is approved by Military Board, Aircraft Components, Aeronautical Standards Group, as conforming to specification AN-638, drawing AN-1114-1. Operating characteristics are the same as the original design.

Years of experience between MICRO switches and the aviation industry have made possible the development of a great number of precision switches, actuators and assemblies to meet the varied and constant demands of aircraft service. For full information on the MICRO line of precision switches for military, contact any of the offices listed.



The original MICRO BZ-R31 (AN3210-1) switch of which thousands are in use is shown. It has now been improved by the new and more convenient design.



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Vol. 31, No. 21

AVIATION WEEK

Nov. 21, 1949

AF Planning Huge New Research Center

Next three years to see first supersonic test units completed at Tennessee site.

By Alexander McQuay

Three major operations aircraft test facilities at the USAF's new Air Engineering Development Center in Tennessee will be the first units in an elaborate long-range plan for a nationwide new aviation research establishment possibly larger than the present Wright Field aerospace research facilities and the Goddard Field War II aerospace research center at Dayton, Ohio.

May Gen. Franklin O. Canale, deputy to the USAF Assistant Chief of Staff for Materiel, who has been assigned to direct planning for the new center, outlined to Aviation Week initial steps in the AEDC plan. First major test facilities will be:

- A high-altitude engine test chamber, capable of testing "very large" jet engines under simulated temperature and humidity conditions, well beyond any comparable facility now available.
- A hypersonic wind tunnel, capable of speeds beyond Mach 5.
- A 6 ft. by 8 ft. hypersonic propulsion wind tunnel, capable of speeds up to 10,000 ft. per second.

First two facilities at the site, about 75 mi. southeast of Nashville, are to be completed within three years, all are expected in operation in five years.

Informed sources expect Gen. Canale to be the first commanding general of the new center when it is activated as a separate USAF command. Until September, he was director of research and development at Air Materiel Command, and holds an M. S. degree from Massachusetts Institute of Technology. Air Materiel Command headquarters and its research laboratories will remain in operation at Dayton, and will do much of the test work of developing and testing Air Force equipment at least during the next few years.

Over with the emphasis on higher and higher speeds for aerial weapons engineering, it seems likely that development emphasis will shift toward Tennessee in rapidly in the future development facilities are required to carry their share of the load.

► **Research Competition**—Effort of the new center in prospects of the Na-



May Gen. Franklin O. Canale

tional Advisory Committee for Aeronautics for additional research facilities is not yet clear. However, the fact that the Senate in its recent session directed NACA funds for construction of a 10 ft. by 8 ft. propulsion tunnel at Lewis Laboratory, to duplicate the propulsion tunnel at the new AEDC, puts the new center in the position of a formidable competitor for whatever congressional research funds are being doled out by Congress hereafter.

► **Vice Research**—Paul De Tardieu, vice research, military sciences department and director of the Gas Dynamics Research Laboratory at California Institute of Technology, will be chief civilian scientific adviser for the new AEDC.

Replacement value of the hypersonic tunnel is set at \$16 million; the altitude chamber for engines at \$13 million, and the hypersonic propulsion tunnel at \$11 million.

► **German Equipment**—The hypersonic tunnel and the engine altitude chamber, Gen. Canale disclosed, are formerly equipment used in Germany after the invasion. The hypersonic equipment has been modernized and additional equipment designed to supplement it.

The installation at the big \$33,000-acre

AEDC site will be made with assistance of some of the German scientists who originally designed it and operated it in Germany.

It is understood that the \$33-ft. wind tunnel is essentially similar to the \$3-ft. propulsion tunnel now in operation at NACA's Lewis Laboratory at Cleveland, except for larger size.

► **Engineers Survey**—Survey of Engineers has been asked to study the site for suitable locations for the three major installations in order that each may be situated as close as possible.

Available for expenditure for the construction in a 36-month period approximately plus additional authorization for \$24 million. Total authorization approved by Congress for the center is \$180 million. It is anticipated that the \$180 million will be expended in the first five years of the program, and that additional funds will be required for additional facilities still in early planning.

► **Land Problem**—Settled on the development center's expenditures for research facilities is a requirement that each year's expenditures shall be justified by expenditures before the Research and Development Board.

Solution of the Tennessee title, which includes the former Camp Forrest World War II Army base and Wilson Northern in 1944, World War II P-38 training base, is a matter to be decided by the state, was announced by Air Force Secretary W. Stuart Swinton, with approval of President Truman, Defense Secretary Johnson and the Research and Development Board.

► **Second Choice**—The Tennessee site was reported No. 2 on the list of 25 locations considered by the 30 Army research engineering firm of Development and Development Board.

► **First Choice**—The Tennessee site was reported as favored over the Tennessee site, less other considerations than structure. However, the Tennessee site, and the fact that Senator Kenneth McKellar (D., Tenn.) was chairman of the general Senate Appropriations Committee, was factors in its selection.

► **Future**—The Tennessee site is within four miles of the Tennessee Valley Authority

power network, one of the largest power supplies in the country.

► **Power Problems**—Situation of available power supply was a determining factor in letting further construction of power facilities at Dayton, Ohio, leading Air Force development center since World War I. Shortage of electric power in the Dayton and Miami Valley area during peak days of World War II, was such that potential Wright Field wind tunnels could be operated only about 2 a.m. when other electric loads were down.

An Air Force spokesman has stated that TVA will be able to supply additional power for the AEDC without backlogging other essential power to government in the area. Industry reports from the area indicate, however, that present demands for TVA power are close to the maximum power now available.

► **Main Highway**—As a part of the agreement with the Air Force which brought the AEDC to Tennessee, the state and the city of Tennessee, which administers the Camp Forrest area, agreed to move a main highway which transits the chosen site. As a result of cancellation of the original proposal by Congress, little attempt is possible housing the AEDC personnel in barracks. Probably the Air Force will seek to encourage private enterprise to build the required housing facilities for AEDC personnel, which in the "Tennessee" plant currently projected will amount to approximately 1900 persons, including about 150 and two personnel.

Boeing Unions Still at Odds

Boeing Airplane Co. is again involved in an Seattle plant took a new turn when the Teamsters Union, declared as an NLRB election for the Aeromarine Mechanisms Union, IOT in 1977, sought to have the election held privately because of a topographical error on some ballots. Thomas P. Gorman, Jr., regional director of the NLRB at Seattle, has recommended the Labor Board overrule the Teamsters' objections.

Here's what happened: In the early hours of voting ballots used by the NLRB called the discrepancy "A. F. of L." in parentheses after the name of the Aero Mechanisms Union, actually affiliated with the independent International Assn. of Machinists. The error was discovered after 260 votes used the faulty ballots and three votes were thrown out.

But, the Teamsters contend, anyone who saw the ballots would believe the Teamsters had had during their campaign when they pointed out that the Aero Mechanisms were not affiliated with the A. F. of L.

NACA Fire Research

A C-46 C-46 C-46 transport has been deliberately crashed in controlled experiments on aircraft fire hazards. The transport was crashed by the NACA Lewis Flight Propulsion Laboratory, Cleveland, to determine feasibility of the method to investigate causes, spread and control of aircraft fires following crashes.

The big transport was loaded to a desired weight of 10,000 lbs. and the engine started. Then the pilotless airplane was allowed to enter across the horizon, simulating a forced landing. Cameras in several positions and microphones within the airplane recorded the behavior of fire, its spread in direction and speed and its damage to the airplane.



B-50 SPROUTS WINGTANKS

Newest version of the Boeing Superfortress, the B-50D, now carries two fuel tanks of 700 gal. capacity each, under its wings just beyond the midspan engines. Alternatively each wingtank stores one or two 4000 lb. bombs. With wingtanks the range of the B-50 with bombload has been increased to more than 5000 mi.; alternatively maximum bombload can be increased to 20,000 lb. Additional radio equipment, new modified

Results of the controlled experiment are now being studied by the NACA Subcommittee on Aircraft Fire Prevention to determine if the crashing of big planes should produce worthwhile research results on the fire problem. If so, a more elaborate program will be scheduled. Major burning problems in the development of subsonic supersonic aircraft to provide complete information on the initial and subsequent points of fire origin, conditions of its propagation and causes of its origin. Program goal is to formulate methods by which results can be obtained virtually, but not.

The crash study is part of a fire protection research program of the NACA Lewis Laboratory under the direction of L. A. Rodert, 1946 Collier Trophy winner for his development of an atomic airplane.

Designs now on file, a modified transport, four forward engines, and the Boeing single point ground refueling system are other new features. Installation of aerial refueling equipment proposed for the B-50D will extend its range to virtually any limit consistent with refueling constraints. A total of 222 B-50s is on order by the USAF with deliveries expected to continue well through 1974.



NRD-1, originally built for Navy, chosen Air Force as value as well.

RESCUE operations in getting up mountain while big ship leaves.

USAF Copter Competition Heavy

Bell, McDonnell, Piasecki and Sikorsky contending for contract to supply large Arctic type.

Four aircraft manufacturers—Bell, McDonnell, Piasecki and Sikorsky—are competing for high stakes in the USAF evaluation tests to select a large Arctic rescue helicopter.

Along with a USAF contract the winning company will get an important boost over the development cost has that which has held back helicopter progress since war and Advanced in direction of that was shown in the recent New York helicopter meeting. (See page 10, Nov. 21) when plans of the competition announced emergency version of larger copters obviously adapted from their services in the USAF competition.

In addition to all that the winner will be in a favorable position to give Navy contracts for large helicopters, to be used in rescue work and as Marine beach-landing transports.

► **Future**—Single-engine rescue the Evolution Road has been making the rounds of the photo, and the contract is expected to be awarded around the first of the year. When it's awarded the Evolution Road is looking for:

► **A single large enough to pick up the entire crew of a disabled bomber in one trip.**

► **A copter with fuel capacity which will allow it to make a fairly long rescue mission, and still have over the minimum for approximately a half-hour.**

► **No Cab-Door Types**—To fit these extra requirements, 222 B-50s is on order by the USAF with deliveries expected to continue well through 1974.

single test Bell's Avrocon Corp., which was to be a fifth competitor with its all-terrain NR-30, is not expected to stand much chance since the recent loss of its prototype machine at Canadian, N. J.

► **McDonnell**—Several variants of the all-terrain HRP-2 helicopter are already in production for the Navy. This time one model is a development of the original HRP-1 Ascender, which had a large covered fuselage.

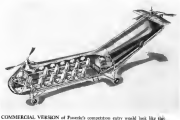
► **Sikorsky**—The company has a 12 place all-terrain development of the Sikorsky large Arctic rescue configuration,

with smallish but longer tail rotor. Current version of this will be designated the S-55.

► **Bell**—Its entry will be a 15 place all-terrain design known as the H-12, from which the 13 place rescue-lander design has been developed. This copter also uses the large single rotor and small tail rotor development.

► **McDonnell**—The NR-30, largest of the copters, has been under experimental development for several years. Power is provided by two Pratt & Whitney, Wasp Jr. 440 hp engines, mounted in nacelles on stub wings, and adds second thrust is afforded by apogee exhaust stacks. Either engine will drive both rotors.

Copter is now equipped with two 60 in. diameter free-blade rotors which intermesh, giving the craft a total span of 51 ft. from one rotor tip to the other. Originally, the craft had non-intermesh



COMMERCIAL VERSION of Piasecki's competitor entry would look like this.

New Feature

Starting with this issue, *Airline Week* is expanding its section on New Aviation Products. An added feature will be frequent review evaluation of products as well as many of them recently introduced. First of these, today's article on a new office transportation system for Continental, will be found on page 71. The section will continue to carry pictures and descriptions of new products in aviation, as in the past.

ing 49-ft. cabin. A horizontal stabilizer has been added to the original vertical fin.

Company reports the X311D-1 has flown to 12,000 ft. and has maneuvered successfully with a gross weight of more than 11,000 lb. It will cruise at more than 180 mph with a useful load of more than 2000 lb. Prototype has a three-covered fuselage and does not have metal nose bladders. However, McDonnell is willing to change fuselage and blades design to meet the all-metal specifications at performance of the craft is acceptable.

The McDonnell craft has been on the shelf for almost three years, after it was built under Navy contract to test twin-engine double rotor helicopter arrangements. McDonnell, that fact, has declined to place for a commercial version of the X311D-1.

► **Development Aid**—Initial competition is for a flying prototype, but is expected to lead into production order for a small but steady flow of helicopters extending over several years. The contractors figure that a military contract will absorb tooling and development costs, a strong asset toward commercial production of the winning design.

IATA Grapples With Devaluation

By John Wilhelm
(McGraw-Hill World News)

MEXICO CITY—Devaluations were strong last week, first the International Air Transport Ass'n's traffic conference meeting here but little hope of immediate solving the heavy problem of air getting international air fares to make up for the wave of currency devaluations in September.

This was borne out by the earlier week's action in adopting a three-month emergency extension to enable its international clearing house in London to continue operating by using current av-

change rates as though as a base for settling sterling accounts.

The devaluing of the dollar and other representatives to air a world-wide food shortage of hard currency funds, which could be then translated into any other currency depending upon its valuation with the dollar, has been more or less foretold because this would mean still less success in most quarters that devalued.

► **Devaluation** Advantage—Devaluation gives the sterling area and the franc area no advantage that they are reluctant to lose by raising their own fares. In fact, government-owned European lines (Air France or KLM for example) have possibly been told that revenues would be contrary to government policy.

U. S. airlines, on the other hand, find that devaluation does not give them enough dollar return on ticket sales as European companies to make their air routes profitable. Raising of the sterling fare on trans-Atlantic flights has almost solved this for one route, but elsewhere the problem remains.

In the face of that situation, the financial experts of IATA wanted out an involved exchange schedule with coefficients for each currency, allowing for devaluation, and this has been as one more devaluation at IATA's clearing house in London. Those members now have been played for six months more.

► **Travel Card Proposal**—The meeting, which was expected to continue all through last week, was called to arrange 1950 airline rates for some 65 airlines from more than 40 countries. One of the most promising routes to cover be-

Howard to Fairchild

Ben O. Howard, widely known engineering test pilot and 1915 Indianapolis Race winner has been appointed general manager of the airplane division of Fairchild Engine & Airplane Corp., of Fairchild, Conn., Md., by President Dick Beutler. Howard has been associated with several of the major West Coast aviation companies, principally Douglas and Convair in the last several years, and piloted the first flights of several large prototype airplanes. He is a member of the Council board of directors and has been technical assistant adviser to Floyd Carlson, Convair board chairman, for several years.

for the endorsement as the proposed European travel card to replace the present national passports. With this card, which is under consideration by the Council of Europe, travelers could go anywhere in Europe without acquiring previous visas, etc.

IATA officials have hoped that they can prevail on other parts of the world to adopt these travel cards as the net too far off future. One such card for Latin America, for example, would save several hours of effort in going through present visa which require visas for almost every one of the 21 Latin American governments.



NEW TRANSPORT GIANT, the Douglas YC-124 is undergoing two tests at Santa Monica. Company expects craft, which will...



MIDWINTER AFTER C-74, to be used for flight testing the last work of McDonnell. To help build its TR-800 Ds, beyond the YC-124...



GE JETS FOR B-36D

Detailed view of the condition of two General Electric J-47 turbojets in an engine shop, as in the case of the B-36D intercontinental bomber. The jets used on the B-36D are identical to those on the Boeing B-47 and similar for both planes will be made by Bell Aircraft Corp. in Buffalo. Because the B-47 jet houses the leading lights and the outward wheel of the engine

type being gone the B-36D jets have the plans for these modifications based on the wheel well. The J-47 is now rated at 5200 lb. static thrust but has been delivering up to 5600 lb. Mechanics are shown attaching an electrical power connection for starting the turbojet. Jet pods will be added to all USAF B-36 models.

Cargo Carrier

Douglas Aircraft Co. plans to flight test the work on F71,000 lb. YC-124 Globemaster II, scheduled to be the largest production transport in military service.

Company officials say the four-engine cargo plane, which is nearly two-and-a-half times as heavy as the C-94 Stearman, can fly a 19,000 lb. payload 150 miles, unladen, and return, without refueling.

Producers is already underway now at Santa Monica on an initial U. S. Air Force order for 33 C-124As.

Prototype YC-124 is powered by four Pratt & Whitney R-4100-9 engines rated at 3300 hp each, driving four-bladed Hamilton Standard propellers. Production model, C-124A, will be powered by four Pratt & Whitney R-4100-20V engines rated at 3500 hp each, driving three-bladed Curtiss Electric propellers.



USES CLAMSHHELL DOORS 11 ft. 6 in. high by 11 ft. 4 in. wide.



COMET COMFORT is apparent in this 14-seat arrangement for long flights. For medium-haul capacity would be increased to 48-50.

Detailed Data on Comet Revealed

De Havilland studying 40-50 passenger version for medium range, as well as 36-seat long-haul plane.

By Robert H. Hunt

The de Havilland enterprise is evaluating modifying the Comet transport to use as a broader sales market.

Principal modifications will involve an increase in the 14,000-lb payload to permit the Comet to function as a medium-range transport in addition to its original conception as a long-range mail carrier. De Havilland is having the switch in its original Comet program as a result of the initial three months of test flying which have revealed limitations that the Comet can compete with current piston-powered transports down to medium ranges. If the Comet can operate profitably over medium-haul de Havilland hopes to sell airlines on manufacturing on a Comet fleet to meet all their future equipment requirements.

Severin, Gamble-Smith, in de Havilland's planning committee, with current thinking of principal U.S. transport builders who are presently agreed that a jet transport can be built that is economical in both fields.

The Comet is now designed for a 14-passenger payload over its main range. It is to accommodate medium ranges the capacity would have to be increased to between 40 and 50 passengers.

The Comet prototype has now completed 150 hours in the air at the first four months of test flying—a remarkable record for an experimental aircraft which offers support for the jet transport enthusiasts' claims of reduction in maintenance. It is obvious, too, that the Comet's record could not have been compiled if there were any serious bugs in either airframe or engine.

Included in the test program:

- 2600-psi. autopilot flight test regime at average altitude of 35,000 ft in 4 hr.
- 2500-knot country between London and Tokyo in 6 hr. 30 min. flying time and average 670 mph. block speed. Doing so 100 mi. 30 ft of the top between Times and Southern France, the Comet flying at 35,800 ft in no wind conditions covered the distance in 51 min.

Radar speed by the Gee method was used. Phase took off from London

at close to maximum gross weight.

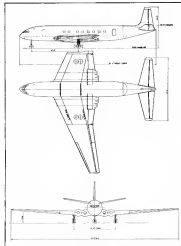
- Initial tests in aspect traffic patterns including night landings, GCA approaches and holding procedures.

The de Havilland has finally cleared off all specifications on the Comet's external dimensions which essentially can firm American Waco's earlier estimates. These specifications are listed on the box on page 17.

The 11,000-lb. payload in the Comet prototype and early production versions is carried in two passenger cabins and three cargo compartments. An eight-passenger section is located forward of the front spar structure in the fuselage. Main cabin aft will seat 24 passengers in two double seats which are separated by a 6 ft., 3 in. high center aisle.

Two three- and two of the seven main cabin windows are fitted as emergency exits. Main passenger entry door will be on the port side at the rear with a vestibule to hang coats just inside the door.

Another door located forward on the starboard side provides access to the flight deck, galley and main cargo compartment without disturbing the passenger flow. That cabin will be fitted with the cabin with a 5 ft. head clearance. Floor of the passenger compartment and the rear lobby hold are stressed for a loading of 57 lb. per sq. ft. The forward cargo



Top-down drawing of de Havilland Comet

compartment is built to hold 138 lb. per sq. ft. Total of 555 cu. ft. storage space is provided in three cargo and baggage compartments: one located between the flight deck and the passenger cabin with a special compartment for explosives and mail and baggage, another in the tail section, and the third in the freight locker aft of the wing. Forward baggage compartment is used to hold pressurization and electrical equipment. Galley is located forward with two lavatories in the tail.

• **Fuel Arrangement**—The Comet's present fuel load of about 7200 U.S. gal. is contained in two integral wing tanks outboard of the engines and cell-type tanks in the center wing section which can be used for fuelage. The fuel system is designed for refueling pressure including at a rate of 150 gal. per min. but can also be used normal top wing methods. Air fuel tank venting is done from

a leading edge inlet in the wing which can also be used to blow out fuel by two pumps for emergency pressurizing. A mechanism, built in fitted on the underside of the engine cowling where it will be the first part of the plane to contact the ground in a wheel-up landing. When lower intake control is cut off the fuel supply of all four engines, cut off electrical power and operate the fire extinguisher system. Methyl borate fire extinguisher system is used to protect the engines, leading edge wing fuel tanks and the landing gear.

• **Thrust**—Anti-kick—Thrust on the wing is planned for engine air intake, leading edge flap, wing, engine, and landing gear. • **Radar Equipment**—Storage space is

Comet Specs

Following are the first official specifications on the de Havilland Comet transport:

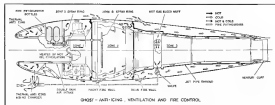
Span	115 ft.
Length	93 ft.
Height	28 ft. 4 in.
Wing area	2915 sq. ft.
Rust chord	29.3 ft.
Tip chord	6.75 ft.
Spanchord at 1 chord	30 deg.
Foreplane area	8.75 ft.
Wingload max.	extreme
Wingload max.	18.25 ft.
Tail span	42.67 ft.
Payload	11,000 lb.

provided for medium, high and very high frequency radio equipment, duplicate ADP (U.S. and navigation) receiver, radio altimeter, distance measuring equipment, ILS and an automatic system of automatic radio to reduce delay. They are located in the vertical and horizontal fins, nose wheel doors, fuselage top and the underside of the wing root flaps. Wing spars between the engine and open structure to 11 ft. diameter equipped with radio and emergency radios and actuated by an automatic alarm.

Comet controls are power-operated by completely duplicated hydraulic lines with duplicate control points for both engines. A South autopilot is installed. Split flaps are fitted over the reduced section of the wing with flaps without. Automatic trimmer down is applied when leveling. Four foot of authority are installed upper and lower on each side of the wing at the front and rear portions. These are four hydraulic power systems each with two pumps and a 24-volt electric system operated by engine-driven generator.

• **Pressure System**—The cabin pressure system is designed for maximum existing differential pressure of 5.25 lb. per sq. in. to give maximum cabin altitude of 8000 ft. at 40,000 ft.

The pressurization system is installed in duplicate and is capable of independent functioning. Each air supply for the cabin is tapped from the compressors of the four engines and cooled before passing into the cabin. An air supply system in each wing can be operated independently and other system can supply sufficient air for pressurization. Heat for cabin air is from the engines. The Comet is equipped with an emergency oxygen system that permits a descent from 40,000 ft. to 15,000 ft. at maximum rate. Four portable oxygen system are also provided.



AERONAUTICAL ENGINEERING



Design Highlights of North American F-86

Fastest, highest-flying fighter in first U. S. swept-wing plane. Uses large ailerons, wing slots, tapered sheet.

By Robert McLauren

U. S. Air Force now has two full fighter groups (4th Fighter Group, Andrews Air Force Base, Md. and 34th Fighter Group, March Air Force Base, Calif.) in operation with North American F-86A Sabres sweeping into—but not across—fighter in the world. A third group (55th, at Kirtland AFB, Albuquerque, N. M.) is now being activated in plans come off the production line, and others also are scheduled to receive the new fighter.

■ Race Performance—It was the arrival of the 1949 National Air Races that the USAF chose to select its most potent defensive weapon to the world, and it was the Thompson Trophy event—"F" division—that revealed full performance of the F-86. With full loads at altitude, both fighters that finished the race had near-empty tanks upon landing, indicating that at maximum speed at sea level the swept-wing speed also has an endurance of only 16-17 min and a range of but 280 mi.

Although putting an average 592-175 mph. for the race, figures available make close calculations possible of the rim fighter's speed potential. Thus, Capt. Martin C. Johnson posted a fastest lap average of 615.444 mph. over the 17-mi. course calculated on the elapsed time around the pylons. Since the course was flown by both Johnson and Capt. Bruce Cunningham in a circle, it is

shown that their actual air miles to cover the 17-mi. course were each closer to 20 mi.

On the basis of the elapsed time and the greater distance flown, the F-86 was flying at precisely same speed in full view of 53,930 spectators.

■ Speed's Toll—That both pilots received the cuffs' placarded critical Mach number of .695 is evidenced by the extreme and dangerous design done to Capt. Cunningham's plane. A

close inspection immediately after the race disclosed a literally "abraded" cockpit.

Other two-thirds of both pilots was missing and the metal framework remaining had popped its trailing edge rivets, resulting in the upper and lower surfaces being about parallel. Ropes of the seats were badly twisted.

When Cunningham heard and felt the elevator "go" between the 6th and home pylons he surely felt his canopy adrift, "emergency" preparation switch while he felt out his controls to ascertain the degree of control loss. He managed to cross the finish line, soon into the air, circle and make a perfect landing that at maximum speed by use of the stabilizer incidence lockers mounted on the control stick.

This control provides a 1 deg per sec rate-of-change through 14 deg travel of the power-driven incidence lock. The sole fault of this accident disaster the wind superiority of this method of trim control used on swept-wing aircraft.

■ Some Speed Exceeded—The F-86 holds the existing world's land-based speed record of 679.951 mph. set Sept. 15, 1948 at Maxwell Air Force Base, Ala., by Maj. Richard L. Johnson. In the past year the airplane has raised the mark considerably to better than 700 mph in level flight at sea level. The airplane has also exceeded Mach 1 in level flight at high altitude.

In the spring of '48 the prototype XF-86 exceeded the speed of sound in a dive for the first time as part of its Phase II flight tests (Aviation Week,

North American F-86A Sabre J-47-GE-3-5200 lb. thrust	
Span	37 ft. 1 in.
Length	37 ft. 6 in.
Height	14 ft. 9 in.
Empty weight	9,200 lb.
Normal gross weight	13,715 lb.
Maximum permissible gross	15,500 lb.
Maximum speed	669 knots @ 41,000 ft.
Speed	708 knots @ 20,000 ft.
Tactical radius	515 mi.
Normal range	515 mi.
Ferry range	3,940 mi.
Service ceiling	53,000 ft.
Altitude ceiling (no data)	\$7,000 ft.

CYLINDRICAL ACCUMULATOR DEVELOPMENT

Recent advancement in 1000 psi hydraulic systems have resulted in compact hydraulic systems of low capacity having extremely high burst pressure. 3000 psi accumulators have been developed and manufactured in the past 7 years have not so far been able to meet all requirements of USAF and USN specifications for these devices. Up to now several have been available but the most recent operating condition have caused an outgassing of accumulator fluids in some particular applications.

Approximately a year ago the Pacific Division of Bendix Aviation Corporation, faced

with the creation of accumulating the piston, moved to the cylindrical type of accumulator which was standard early in the war. A thorough, concentrated development program started on during the past year has allowed on the different successful with the design cylindrical accumulators with the result that they now have available cylindrical accumulators which have met all requirements of the standard AN-A-18.

PISTON AND WORKING ADVANTAGE

Not only do these accumulators satisfactorily pass all potential tests but they meet the weights of the cylindrical accumulators and are

available in a non-combustible form that of the spherical type thus reducing weight and the physical shape of the accumulator. The use of a shorter length diameter type has resulted in a minimum of loss weight at the cylinder ends and joints and at the same time has eliminated problems associated with handling and lifting existing ring problems.

Proved before an item which shows the weight for a given displacement accumulator as demanded with various length diameter ratios.



NEW BENDIX-PACIFIC CYLINDRICAL ACCUMULATORS

For -40°F operations and other specialized applications

Consistent engineering development at Bendix-Pacific over the past year has produced these new type Cylindrical Accumulators for specialized applications.

They are built to regular production. Any application for which they are being specified use those requiring -40°F operations where both low clearance and fast discharge must be handled, and where high operating temperatures are generated by rapid fires in restricted systems. These Accumulators have been designed to meet these conditions and have been built to comply with MIL-A-83.

Flexibility of design permits adaptations to meet any maximum displacement. Weight savings are obtained with piston and cylinder type while prices are considerably less.

For complete information and engineering assistance write:

Pacific Division

Bendix Aviation Corporation

Executive Office: 495 Fifth Ave., New York 17 • Canadian Branch: Industrial Branch 100, Montreal • Paper Division: Bendix International, 2100 Ave. of the Stars, New York 10, N.Y.

Also of interest is the fact that when numerous accumulators are required in one system, steps can be built into the cylinder to bring the trend of the piston. Requirements for hydraulic systems call for adequate reserve capacity to prevent instant failure of the accumulators from this purpose. Large accumulator capacity, therefore, calls for high reserve capacity but a simple step in the accumulators to limit the piston travel will save an equivalent volume of oil, thus representing a reduced weight saving. The small diameter has resulted in exceptional simple construction. The use of the same dimensions used and some have systems used on Bendix-Pacific spherical accumulators, of which more than 70,000 have been built, has simplified this development problem.

WEIGHT AND CAPACITY ADVANTAGE

New style contained steel design in the end cap have further contributed to the light weight of the accumulators. The fitting places and end connections designed by Bendix-Pacific resulted in a minimum change of loss as change in oil were no more than one of 100 psi but have been expressed and this was directly transferable to a fully "O" ring. The use has occurred only as it is 3000 psi cycling and the design the leveraged "O" ring in use of oil was expressed at normal operating ranges.

Anticipating an immediate demand for the type of accumulators, the Pacific Division is taking steps to set up high volume production facilities when they are required in the low price of the cylindrical accumulators.

(Advertisement)

★ THE NEW LOCKHEED F-90



...IS Whittaker EQUIPPED

Now using gas turbine engines, the new Lockheed F-90 is one of the best of the U.S. Air Force in flight. It is a big, high-speed, long-range fighter designed for performance flying in behind enemy lines. Naturally, the F-90 is Whittaker equipped here, even to take "junk" heat exchanger exhaust. Whittaker is also equipped with valves for the most advanced engine systems. Whittaker has its valves control the air engine compressed air air exhaust system. Would make a perfect fit. Whittaker valves has made them the standard of industry. We want you to believe your valve problems are all disappearing. Write Mr. B. WHITTAKER Co., Inc. 115 N. Cassien - Los Angeles 34, CA



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It must accommodate such difficult conditions as intense large moment due to aerodynamic, rolled system stretch, wing flexibility, varying rates of application of control, etc., all of which vary with speed and attitude.

▶ **Leading Edge Slats**—A major consideration caused by wingtip is the rapid increase in effective dihedral with increase in lift coefficient, creating a lateral problem at the stall in during takeoff and landing.

While this usually may be accommodated by large aileron and deflection, the problem of system flow in swept wing configurations may actually upset the effectiveness of even a large, auto-deflection aileron stabilization. Also, wing exhibits a well known requirement of maximum lift coefficient and all of these effects lead to provision of leading edge slats. These consist about 45 percent of the wing span span and are conventional automatic type but with a mechanical override.

The slats move out automatically whenever the pressure coefficient over their surface is determined by speed and engine attitude, reaches a predetermined value. However, they may be opened manually by pilot on final approach when speed is 300 knots.

In addition, they open mechanically when the gear is lowered at 170 knots, if pilot has not previously opened them. After landing, they are rolled back into retracted position. This combination of slats and aileron control gives the F-90 a surprisingly quiet stall and leading characteristics, and indicates that the dangerous properties of swept wings at low speeds may be fully controlled by proper design.

▶ **Low Tail Sweep**—North American developed a lower degree of sweep in the horizontal tail sections than in the wing, as sweeping control to perfect established in later swept wing aircraft. With the system used in the F-90, the product of sweptness times cosine of the sweep angle produces a higher effective velocity at the stabilizer than over the wing.

In the case of both profiles using the same flexion ratio, the critical Mach number would be experienced first on the tail, then as the wing is swept back the reverse of that observed. North American considered this possibility by the use of a isolated shock cone on the stabilizer profile, but it would appear that this idea was chosen to give both wing and tail the same critical Mach number.

In view of the accident to Capt. Cunningham's plane, the probability exists that a critical Mach number disturbance exists between the two sections, with the lower value under the tail.

Another strong possibility, however, is that the elevator structure (including the hinges and control linkage) is not on

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A new, authoritative book on this important subject...

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Just received this book is the result of 15 years' study of high temperature problems by United States Steel Corporation and its manufacturing subsidiaries.

It is designed to be helpful to engineers, metallurgists and chemists in their quest for suitable structural materials that will meet the adequate strength under the elevated temperatures involved in the power, petrochemical, transportation, chemical, and other industries having similar problems.

In its pages are discussed the general principles of behavior of various materials under elevated temperatures, the various factors that influence this behavior, as well as the special testing equipment and laboratory techniques used to evaluate the elevated temperature properties of steel.

In the comprehensive data section, the significant property values of most of the common steels suitable for use at elevated temperatures, are presented in tables and graphical form. Characteristics such as high temperature strength, oxidation resistance, weldability and others are discussed.

Much of the information in this book has never before been published. You'll find it valuable as a reference if your work involves the operation of equipment that must function at elevated temperatures. Use the coupon.

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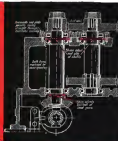
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North American for 325 F-36s

The first production F-36A, with General Electric J-57 GE-7 engine installed, made its first test flight May 20, 1948, or only eight months after the prototype had flown. This was the first flight test of the new engine, which develops 5200 lb static thrust (4000 lb with water injection). The engine has the same dimensions at its predecessor, the J-35, so that no major changes were required in the plane. Production deliveries began June, 1948.

In January, 1949, Capt. Henry J. Pascho went aloft in a specially modified F-36A, mounting two 2000-gal auxiliary fuel tanks for his flight from Mutsa Field, Inupiat, Chukotka, to Ladd Field, Fairbanks, Alaska. These tanks were mounted below the wing only a few feet out from the fuselage. Tip tanks cannot be used on the F-36 because the forward location of the tip would destroy the plane's balance.

Eliminates Resetting Altimeters in Flight

A new altimeter procedure, aimed at reducing pilot workload and hazard in reaching from 10,000 to correctly adjust altimeter for use in flight, currently is being tested by the Air Weather Service of the Military Air Transport Service.

The system altimeters used for non-stop flights altimeters during a trip, and all pilots, on becoming airborne, set the instrument at the standard sea level pressure at 29.92 Hg and maintain this setting until arrival over destination.

To affect altimeter cross-indexing by pressure and temperature variations, the pilot is advised to stay above a minimum safe flight level prescribed for the particular air route for that day. Safe level flight is determined by the lowest altitude which adequately clears all terrain features, plus a wide margin for altimeter error, based on the lowest pressure and temperature reported in the area.

MAIS notes that if the procedure were set up nationally and universally adopted by carriers, there would be less danger of mid-air collisions. Altimeters on all aircraft would give readings based on identical pressure settings, with possible fatal variations from known cross-indexing.

It points to these shortcomings in the present system:

- Pilots may neglect to reset altimeter or neglect to do so correctly.
- Poor radio reception may result in misinterpreted altimeter settings.
- Altimeters sometimes cannot be reset for prolonged periods because of radio interference or lack of ground stations.



FUEL TANK in CAA has been loaded here for test catapulting.



SUBJECT in it is rapidly decelerated by cable braker.

CAA Intensifies Fire-Prevention Research

Broad program for 1950 to supplement fuel, oil, baggage fire studies.

A stepped-up program of research in aircraft fire prevention and control is being planned for 1950 by the Civil Aeronautics Administration's Technical Development Center located at Indian Wells.

New phases of CAA's fire prevention work include a study of combustion burners used on transport planes, the development of a reliable device to warn of the existence of inflammable vapors before they build into flame; a study of hot exhaust pipes, and research into construction of flame-resistant ducts for today's complicated engines.

Along with the new projects, CAA will continue its baggage fire study and development work on crash proof fuel tanks and fire-proof lubricating oil.

►Catapult Used-In its research-looking toward elimination of fire resulting from condensation fuel and oil tanks, CAA is using a 500-ft tank mounted to concrete foundation and holding a Navy-designed catapult capable of pulling speed up to 100 mph. Detailed tests are being made to evaluate the forms recommended in crashes, the nature of vapors to be expected, and the strength of various fuel structures.

Tanks from several types of planes have been "shot" on the catapult and decelerated quickly or slowly to build up known and maximum G forces and determine at what point they would rupture and spill their contents. Sample tanks obtained from war surplus planes and directly from commercial planes



WIND TUNNEL at CAA's Indianapolis for test altimeters is used in study of . . .



POWERPLANT BLAZER such as this simulated in results of CAA's 1949

head safety,

1600
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Even in the days of old, the head was mighty sensitive to sharp edges. Today, head injuries cause 75% of all fatalities which occur in otherwise survivable light plane accidents.

75¢ a hissheer rivet

The new 75¢ H-SHEAR will prevent many a licensed pilot or licensed mechanic in cock-pit or, more often, in ground maintenance of a plane in cockpit stress. The 75¢ H-SHEAR rivet, replacing the sharp edged screw and nut in canopy and windshield assemblies, prevents a usually spherical rivet, and which will reduce the risk to gas control.



OTHER ADVANTAGES

- Lighter weight of any fastener per shear point.
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See us today at the 1966 AIAA Show



CONTROL ROOM is for life (radio and fused) head safety through modern. Power, light, radio and light, map, fuel, then for scores. All instruments due to

manufacturers are heated down the tank, either full or partly full of liquid to simulate actual operating conditions.

A backup consisting of a steel plate mounted on rubber and backed up with an earth embankment has been built at the end of the catapult track, and future tests will include catapulting tanks directly against it.

Meanwhile, *Aviation*—the engineers from CAA's fire program are interested in a major safety accident they conduct specialized investigation on the scene.

They were particularly interested in the June 27 accident at Victorville Municipal Airport in which an American Airlines Convair-Lear crashed shortly after takeoff but killed none of the 44 persons aboard, despite extensive damage to the ship. Only five were a small case in the left engine nacelle.

Investigation showed that the Convair's wing patch and integral wing tanks were intact. CAA took the trouble to investigate for tests.

► **Baggage Firm**—CAA's continuing investigation of baggage compartment fires have failed to show conclusively that baggage may have started a fire in the air. Nevertheless the suspicion that there may have been weak fires in the air has resulted in more than a year of research—starting and investigating hundreds of fires—many in exact replica of baggage planes. Baggage compartment tests.

Automatic fall of ditches have been tested with burning cigarettes in the folds and borders of pack straps and

around engine operations or fire are particularly avoided in certain electrical malfunctions made by Brown Division of Minneapolis-Honeywell Regulator Co.

Because baggage compartments must be accessible in flight, CAA engineers have conducted tests for reaching a baggage suitcase in a variety of cases of a large compartment model. The tests showed that even with gas masks it was impossible to enter the inside of the compartment.

That, it was proved that if fire were possible in a baggage compartment, an extinguishing system there was necessary.

► **Proposed House Study**—A strong fire on a DC-6 (presumably, the Bruce Cannon accident), caused by overflowing fuel reaching a cabin heater, is the origin for another new project scheduled for next year.

Generation of the three named reports.

While fuel was being transferred from wing tanks, overflow traveled back along the plane's belly under the fuselage and finally entered an air intake to the heater where it ignited.

The air scoop was not considered an "open" heated and apparently did not catch on movement over the plane's skin could not have been frozen, but the projected shock of combustion heat on it will be used to create extra heat loss and operation.



RPM and RHYTHM under the pilot's finger-tip control

- CURTISS AUTOMATIC SYNCHRONIZATION makes propeller rpm control and engine rpm control simple, one-to-one, finger-tip operation for pilots of modern multi-engine aircraft.
- A single lever propeller rpm control—located in the cockpit—establishes the constant speed setting for each flight condition.

... and at the same time synchronizes aircraft synchronous motor — turbine, rpm — of all engines through an automatic synchronous motor unit.

- As a result, CURTISS AUTOMATIC SYNCHRONIZATION ... eliminates noisy, erratic, off-rhythm engine "beat."

... releases the pilot for other important duties during take-off, climb, let down and landing.

... assures more comfort and relaxation for himself, his crew and his passengers.

Other famous Curtiss Propeller features include reverse thrust and Aftload steel blades. Like automatic synchronization, these features were first introduced to service by Curtiss and now are proved on commercial airline and on Navy aircraft.

PROPELLER DIVISION CURTISS ELECTRIC COMPANY CALLED NEW BRISTOL



CURTISS ELECTRIC PROPELLERS

CONTINENTAL DOES IT AGAIN



C435

Continental aircraft engines, holders of all major records, have again entered their own previous lead. The new mark of 1,124 hours used 14 minutes established by Woody Jongeward and Bob Woodhouse of Tusco at their Arrowhead Sedan sets a new duration record for a one-day flight in aircraft of any type.

The C435 is Jongeward's and Woodhouse's prime concern on voyages of only 100 miles of air over the world's most demanding flight. Gasoline consumption averaged only 8.4 gallons an hour. Like the C435 used by Bill Davis and Dick Riedel, this engine was strictly stock.

Coming as it does on the heels of the five-hour record flight, the Jongeward-Woodhouse record underlines again the day-to-day dependability of Continental power. Moreover, it helps account for the ever-wider adoption of Continental-powered planes for military use today, by law, business and industrial firms, on farm and ranch—wherever speed, safety and dependability count.



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New Data on Strength of Metals

Basic structures design handbook revised. Information expanded on elevated temperatures, fatigue properties.

The aircraft manufacturing industry's new covering copies of its new book—*ANC-56 Strength of Metal*—leaves elements, better working document in the design of structures.

This new issue replaces one last revised in December, 1942. It brings to date the data to be used in the design of all U. S. aircraft, whether Air Force, Navy, commercial or personal types.

It is the only document of its type in the world, providing engineers with officially recognized strength data on the metals used in aircraft construction. As such, it is the only of its category throughout the world, the book's technique particularly, rendering a similar problem close to his own industry.

► **New Prepared**—This document was prepared by the Subcommittee on Air Force-Navy Civil Aircraft Design Committee of the Materials Board, Aeronautics Committee. Its membership was made up only of representatives of these two agencies of the government, which are concerned with the procurement and licensing of metals.

However, close consultation was maintained with aircraft engineers as well as with metals suppliers and laboratories.

And it is so primarily because of this close liaison that the new report has been generally acclaimed by the aircraft industry and its own technical agencies.

► **Highlights**—Reviews of *ANC-56* reflect the significant trends in aircraft structural design since 1942 and point to the increasing activity and growth of design during the last ten years.

New and greater emphasis, its expanded coverage in fatigue properties of materials, reflecting the growing importance of this factor as a structural design criterion.

Performance of metals at elevated temperatures is another innovation in the data.

Management has been withdrawn from its earlier subordinate classification under "Miscellaneous Metals and Alloys" and is now featured as its own large section.

Data on welding has been extensively revised and enlarged.

► **Expanded Data**—Throughout the new revision there has been a general trend towards the presentation of more complete and exact data and elimination of charts duplicating information available elsewhere.

Thus, replacing of strengthening in present representative material in the en-

semble types of those called and thickened then welded sections, reference is made to a comprehensive NACA bibliography on the subject.

A similar approach has been taken in the handling of allowable column loads on round tubes in length, by making reference to Aeronautics Library, published by Macmillan Publishing Co., Bridgeport, Pa., thereby saving countless pages of repetitive data.

An innovation in the presentation of mechanical properties of the various metals is a function of their thickness, which will get more a practical hand looks down on standards, where he is liberally taught that no means put that, regardless of the number of square inches of each metal.

Engineered stress now will welcome the new treatment, however, in the absence of standardization.

► **Comments**—New Data: The new material on elevated temperature and fatigue properties appears throughout the new volume. A typical temperature curve is introduced and explained in the first chapter, in a fairly of stress cycle standard curve.

Despite the continuing progress being shown towards the solution of the general availability problem of stressed parts, *ANC-56* is the practicality of the *ANC-56* is making it clear that "no general design code" and continues the use of stress values and margin of safety in its approach to the problem of combined stresses in the industry.

An error appears in the formula for the allowable fatigue stress for the plastic failure of round tubes, in that the upper half of the outer rim has been permitted to exceed the tensile limit on the right. This equation should read:

$$F = \frac{S}{1 + \frac{S}{E}} \quad (1-40)$$

Examine new data are used in the discussion of the reduction of test results on specimens alloy to standard.

In place of the single correction factor chart appearing in the earlier work, *ANC-56* contains seven correction factor charts, each covering a particular alloy and form.

The alternate method (using lengths to a finite stress), which previously was acceptable only to the FAA, is now acceptable to all three agencies. Thus, too, this method is conservative for aluminum alloys.

► **Steel Section**—In this metal has been enlarged, notably by the addition of a discussion of fatigue properties, together

with two tables presenting rotating beam and arrested bending data, and by adding extensive welding correction factors previously.

Presentation of bending and torsional modulus of rupture are entirely new. In the former, the rate bending made by alternate as between is now, replacing the previous presentation of the modulus time in the modulus.

New data have been used in the torsional modulus plot and the family of curves represent varying elements as torsion rather than the torsion stress, formerly used.

Information on 10 aluminum and 10 steel Metal Chemistry is included in the first time, comprising the widespread use of their special properties.

Note has been taken of data on spot welding and data are presented on alternate tensile stresses, reversible bending modulus of rupture, maximum design stress strength and maximum elongation of each metal.

Stress bending can also take its place alongside copper bending in the first.

► **Aluminum Alloy**—A list of the metal is divided into cold (room) and elevated temperature sections, reflecting the growing importance of data at high temperatures for materials used in aircraft design.

An innovation in the presentation of design mechanical properties is the use of "A" and "B" values. The "A" values are the maximum guaranteed "B" values, slightly higher, are based on probability data, and compare figures to be expected in 90 percent of the material. The "B" values are presented as design for all three agencies but are subject to certain limitations as specified by each of them.

Another innovation in the presentation of tensile and compressive strengths is both the longitudinal and transverse directions (parallel and perpendicular, respectively, to the direction of rolling, extrusion, etc.).

The aluminum alloy design mechanical properties tables contain considerably more material than heretofore. *Aluminum 17s* has been dropped but *Aluminum 7S* has come in for its fair share of attention.

For example, the use of increasingly large activities of 7S has caused *ANC-56* to draw attention to the fact that, because of stress effect as well as the properties at the center of large sections are generally lower than those away between the center and the surface, from which location the inspection origin is taken.

► **Fatigue**, Stress Thickness—Again, the problem of fatigue, as introduced by the effects of notches, holes and stress raisers, at considered and reference made to a series of reports covering design considerations in the manufacturing of

the problem. A fatigue test data, obtained from rotating beam, repeated-tension and direct tension comparison tests, are included. Where fatigue strength data are also presented.

Reduction of sheet thickness is a more detrimental in aluminum alloy mechanical properties, while appearing to be an additional complication, the alloy reflects the rapidly growing trend towards designing closer and closer to actual ultimate yield of the material.

Violation of strength with sheet thickness usually occurs with thick metal in a maximum value and then decreases with further increase in page.

For example, the ultimate tensile stress at design thickness varies from 55,000 psi for sheet thicknesses less than 0.064 in. to 61,200 (0.064-0.149) to 62,000 (0.150-0.499) to 63,600 (0.500-1.000) to 55,000 (1.001-2.000) to 54,000 psi (2.001-3.000).

The new alloy 7S falls slightly below the 50,000 psi ultimate tensile stress usually used in stress thickness literature. However, its strength varies (with sheet thickness) from 50,000 in 74,000 psi for the Alclad types and 70,000 to 79,000 psi in the dual form.

Extensive, however, are noted the full 50,000 psi guaranteed and the "B" value, previously mentioned, range up to 56,000 psi, indicating the acceptable strength of this alloy.

An addition in *ANC-56* is a series of typical stress-strain and tangent modulus (both tensile and compressive) curves for 24S-T and 19S-T sheet and extrusion.

► **Temperature Effects**—The data on the effect of elevated temperature on the strength levels of strength of stress thickness alloys are extensive, new, and comprehensive.

The materials were taken up to 700 F. for as long as 10,000 h. and a family of curves is presented in a variety of plots showing the effect of temperature conditions expressed in percent of ultimate tensile strength at room temperature. Generally, the strengths have to be set at less than 50 percent at temperatures up to 300-350 F., then dropped rapidly to about 10 percent in the 600-700 F. range.

The strength, of course, dropped to zero in relation to the length of time the temperature was maintained.

Another series of charts give data on creep, stress rupture and fatigue cycle of stress in rupture. These charts cover the full range 500-1000 h. but are further modified by the effects of heat and alloy.

Data on bleed, dropped and counter-sunk rivets have been extended and a discussion of spotwelded aluminum alloys has been added.

► **Aluminum-In** *ANC-56*, comparison



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alloy has now attained a status of equality equal to aluminum alloy, casting in official recognition as a major aircraft structural material.

The treatment is identical and almost as lengthy as that of aluminum. Its mechanical properties are given, a discussion of fatigue properties, with charts, a series of typical stress-strain and torque-shear curves, and a complete set of elevated temperature charts. Magnesium alloy sheet continues at welded ultimate tensile stress of 32,000 psi annealed and 39,000 psi heat treated.

However, its specific weight is only 0.0645 lb./in.³, compared to 0.108 for aluminum alloy.

The three agencies state their approval of magnesium alloy spotwelding by presentation of maximum design sheet strength and minimum edge distance charts.

It is significant that data on the strength of riveted steel at elevated temperatures, comparable to that presented for both aluminum and magnesium alloys could not have been presented in the new volume.

Also, much of the writing data appears outdated and it is to be hoped that additions sheets will also be provided in the next issue.

Publication of ANCI is also has cleared up one of the widespread and hazardous mistakes of aircraft structural design—one of the most "mistakes of failure" in the earlier edition. After all of the confusion after tests that have been held about this mistake but obviously vital measure, it now appears that this was only a moment and should have read "mistakes of failure."

Aluminum Strips Used For Coating Steel

A new, reportedly superior method of applying aluminum to steel to protect the latter against rust corrosion, has been developed by Reynolds Metal Co., Richmond, Va.

Essentially, the process involves the application of aluminum hot strips to both surfaces of the steel sheet after a fine iron coating has been deposited on the steel by electrolysis, to provide a permanent bond between the two metals. The old method of dipping the steel in molten aluminum did not provide a satisfactory bond, the company claims.

In actual roll operations by the new method, the coating is applied in a continuous process. The steel is passed from a coil through a cleaning bath, an electrolytic bath, then through a furnace where it is heated to about 850 F., and finally between two strips of aluminum foil which are bonded to the steel by high pressure rolling.



Standard Equipment for the Beechcraft Bonanza ...the RCA One-Sixteen

The new Beechcraft Bonanza is delivered complete with the RCA ONE SIXTEEN as standard equipment.

In adapting the ONE SIXTEEN to the special performance requirements specified by Beechcraft for the Bonanza, RCA aviation radio engineers conducted extensive R&D in collaboration with Beechcraft's engineers. This team resulted in an installation which makes the most efficient use of the best qualities of both the ONE SIXTEEN and the Bonanza—ensures the ultimate owner of the airplane the maximum satisfaction with both the airplane and the radio.

This new engineering service is available to other aircraft manufacturers—and to individual flying owners who already have or contemplate making radio installations. Take advantage of RCA's expert counsel on antenna location, installation wiring, signal propagation, or any other problems of that nature.

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REQUIREMENTS—Complete coverage of standard bandpass band FOUR COURSE RANGES—4 antennas serving 300-400 kc. Band 400-500 kc.

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THE ONE SIXTEEN is available in factory package through any one of RCA's nationwide representatives of radio dealers and distributors. See the ONE SIXTEEN in your nearest airport. Or send for the free descriptive booklet, Dept. 16, RCA Engineering Products, Camden, N. J.



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The known heat-treated Delatbeston wire includes wire and cable designed for power, lighting, and communication systems, and for instrument wiring. If you'd like to know more about this latest, high-quality line, just address Service 9534.

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GENERAL ELECTRIC



Link Trainer Tests New Instruments

A modified Link C-6 instrument trainer is being used by the Air Materiel Command at Wright Field to test newly-developed instruments under simulated flight conditions, according to Link Aviation, Inc., Binghamton, N. Y.

Besides standard flight and engine controls, the Link has an auto pilot, a revised altimeter system, provision for recorded takeoffs and additional instruments according to the user.

A separate, but important unit included in the test setup is a large console (right) holding eight gauges, a control and controls. One or all of these gauges can be connected into the Link system of test, through indicator, to altimeter, power, speed or other flight variables. A set in a morning chart traces all variables throughout the course of a flight problem and reference can be made to each recorder.

When a new type of instrument is to be tested, one is installed in the trainer and a duplicate in the instructor's console.

Pilot, called in from nearby operational operations, is briefed on the new device and instructed to "fly" simulated problems making use of the instrument and to stick in cloudy or foggy conditions to test accuracy of speed, altitude, etc.

The new instrument is checked out by 10-100 pilots in the course to provide an average level of proficiency against which to judge the performance of the device. If accurate in the flight problems is consistently good, it is assumed that the new one does the job properly.

If most of the pilots make a poor showing in a reference the instrument is thrown them off. All new units are checked against the auto pilot in the trainer.

New instruments already tested in the AMC Link setup include constant and variable speed indicators and distance measuring equipment. More units are available, but since hundreds of problems must be flown on each, the process takes time.

Test Performance of Actuator Lubricants

A method of testing lubricant performance on aircraft actuators for wing and control flap, flap tabs and landing gear has been developed by the Ford Co., Rossin N. Y. in connection with AlResearch Mfg. Co., Los Angeles, Calif.

The new test enables engineers to prove what lubricant will perform best in actual service and what passes their standards.

Experiment for carrying out the test consists of placing oil on the loaded cylinder and on electrical actuator amplifier in a tank, two solenoid valves, the motor, solenoid and actuator.

The test technique is flexible enough to simulate actual conditions required on a particular actuator performing a given function in an aircraft. Thus, it sets up total loads ranging from 100 to 1500 lb. on the test, and permits comparison with respect to time under load, time at rest, and length of stroke to simulate the particular set of conditions desired for study of lubricant performance in the actuator.



Open Forum for Maintenance Men

The fifth Annual Spark Plug and Ignition Clinic under the sponsorship of the Champion Spark Plug Company brought representatives of the Army, Navy, CAA and every major domestic airline as well as some overseas visitors to Toledo last September.

These men, skilled and experienced technicians, used their views, exchanged practical ideas based on experience and otherwise brought out into the open problems affecting and affected by spark plug and ignition systems.

Champion Spark Plug engineers, working hand in hand with these maintenance men, have found this the most practical means of checking research and engineering findings with operational findings.

The consensus of the entire meeting—the largest held to date—was that it was of mutually invaluable importance to all who attended.

Champion produces spark plugs exclusively, but recognizes that if our product is to excel, it must be considered in the light of all the things that are related to and lower upon the ultimate performance of the product in service.



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STRATTON WILSON/REUTERS/REX, a small hybrid car and counts on the engine

New Cabin Blower for Convairs

American Airlines to install Stratos unit at cost of about \$1 million after tests show great cost savings.

American Airlines has ordered two Boeing Corp. cabin superchargers for installation on Conquest-Lincoln, after thorough evaluation tests convinced the airline it would provide more comfortable passenger service and greater freedom from mechanical delays—which would save time and money.

Changing the powertrain equipment in the 74 American Chevys, costing the owner about \$1 million, will over half of which is for the Series supercharger. Job will be finished next July. Despite the large sum, American figures the supercharger will pay for its cost in a relatively short

The selling has come in that con-
claims after flight testing the Stowe
equipment in its own match plane,
after observing the successful results
obtained by five American Airways
with Stowe superchargers in four
Lockheed 390 Super Constellation, and after
a close study of the original Conquest
supercharger system and the modification
made proposed by it.

► **Why It Was**—As designed by Consolidated Value, the Concorde Lave

would damage the contingent. For Vietnam, for instance, between May of 1948 and January of 1949 had 15 scheduled pump-in visits per 1000 aircraft hours.

None of the authors using Convex had fault with the design or construction of the pumps in comparison. Evidently, they set in work with Convex, Aikman and Vickers in conceiving the difficulties. Work progressed so satisfactorily that a few months ago Convex was able to put out a modification bulletin (Service Bulletin 240-285) which, when followed, has permitted some valves to operate the modified system successfully 90 percent of the time.

• **Solutions**—American Airlines followed closely and participated in much of this work. It tried New York Air Brake Co. pumps. It observed or was advised of the following:

• Western Air Lines eliminated the two pumps on the left engine, changed hydraulic lines to stainless steel and installed filters to catch any chips that could get from failure.

• Trans-Australia Airlines replaced the right-engine pump with a different model Vickers pump and made five other Conquest-related modifications.

• **Pen Airports:** Airways is following the Cessna modifications, making the changes when the aircraft go in for 1000-hr overhauls, and in addition is installing a Reserve making pump to overcome cavitation at low engine rpm and in variable exhaust systems.

• **Continental Air Lines** will be the Convair modification sold, with a Vietnam representative at its assistance have carefully checks the pumps in the planes come in off their runs. CAL is obtaining very satisfactory performance.

But Americans decided to switch over to the new Stratus west. It had several reasons. As the first and largest buyer of Continental's, it has some money tied up in the airplanes. And it operates them over its long routes (compared, for instance, to Continental's compact pattern) making it impossible to have the pieces of the company overhaul base as frequently as CAA—experience indicates, at least.

• **Wife Strikes**—The Statens unit study was the clincher for American. The AAL-purchased supercharger is Model 500-F. This is a modification of Model 5001 which has more than 13,000 hours of operation in FAA's 749 Con. installation. In addition, the Statens supercharger is certified by the Civil Aeronautics Administration for 1000 hr between overhauls—which corresponds roughly to the airline engine overhaul period, and consequently meets scheduled maintenance.

The States' expenditure is small

and lightweight (Aviation Week, Feb. 23, 1949). Instead of pump and fly, it is driven directly on an engine pulley mounted on the fuselage. It also eliminates the drive shaft that figure in some conventional systems.

Among other advantages Avianco has based on the Stratos II, most are:

- Weight saving of 50 lb per engine over other conventional systems.
- Amazing manual, tool-free and assembly time. Each is about three man hours, although AAM has checked up a lifetime time of only one man-hour.
- Mechanical simplicity that is fast and complete. In addition, the engine can be turned on and off with the seat and can be used for cooling on the ground.
- Positive control over engine speeds through an optional "Upstick" that regulates the oil level in the fluid drive and practically prevents possibility of oil leakage.

In the end, the facts that advanced Avianco Airlines over those of others note the extreme simplicity and reliability of the unit, the better engine service resulting with the reduction in mechanical delays, and the greatly low cost overhaul costs, appear to be in the order of 5000.

Cost Facts—Here's how the Stratos II engine cost figure look to Avianco:

- Line installation per year—\$17,000.
- Overhaul per year—\$74,000.
- Material per year—\$14,000.

Total operating cost per year for all 10 planes—\$120,000.

The significant figures are those for line maintenance and overhaul. Avianco can perform all to say how great a saving these figures are over other conventional systems. The fact that the sale of maintenance contracts costs in operating cost is much lower with the Stratos II, generally is a fact.

And, of course, the fact that the engine requires no repairs is incidental in a short time to a tip off just how great the cost saving is.

Costs—Stratos II, a subsidiary of Products Engine & Airplane Corp., located at 11000 N. 1st, developed a transparent cube supercharger for the Martin 103 when that engine was being planned about three years ago. It looked like the end of the supercharger project when the 103 was abandoned. Stratos II, constructed on an arbitrary work, although the cube supercharger project was kept alive.

So the 103 was not the genesis of the Martin 303 in the FAA 745 Com. and that was not the end of the project. The 303 is in AME's Cessna line. The difference in the two models is that the 303-5 has no auxiliary engine passages and reduced drag, while using the same passage ratio.



More Airline Comfort

To increase airline passenger comfort, Portland-Wooden Mills, 6015 N. 16th Street, Portland 5, Ore., announces "Wood D" The Wood-Suction Tube."

Rebe is lightweight, all-wood product offering 44 in. in length to keep air flow clear and free from drafts. It is constructed to be easy to hold and show and lightens the overhead batten by one-third when held over seating.

Rebe comes in two sizes, 45 x 64 in. or 50 x 72 in., and in three colors.



Machine Shop Aid

Said to enable machinists to lock work into place much faster than conventional methods, there is a new wood chuck, called by Westcott Chuck Co., Orem, N. V., is reported to combine speed and grip of levers and means operated chuck.

Device has solid construction, differing from other types requiring two sets of pins. For quick lock-up, opens the ends and of wood chuck into one use of 2 small accessible holes on the circumference of end, and then rotate screw in lever action. To secure final, tight grip of pin, chuckman turns wrench in one of 6 additional holes adjacent to wood, where pins on wrench engage with lever pin teeth.

Company states need for tighter

pins is eliminated, since device is threaded for direct attachment to 14 in., 5-thread hole spindles. With 7/8 in. diameter and 2 in. hole thickness, chuck can be used on existing machine driving head.

To increase security of device, company has designed threaded mounting plate (right) in which chuck can be easily attached to serve in vice or machine fixture. Unit weighs 35 lb.



Selenium Rectifier

Powerstat, "a new metallic unit for made by Standard Atomic Corp., 94 Clark St., New York, N. Y., has aluminum cooling arrangement consisting of fused borosilicate in which rectifier plates that material of having plates stacked on steel. It is stated that it is possible to increase output of the plates 10 to 20 times of conventional output rating.

New device is reported to use only 1/10 to 1/20 of conventional number of plates. Easily applicable, plates also may be hermetically sealed in aluminum cover without necessity for deslag.

Class is that maximum efficiency is achieved at maximum temperature of 75 C., and that unit will stand that temperature up to 90 times normal.

Equipment reportedly requires slight oil divergence from straight Right Accuracy is attributed, in part, to close control of input rate speed which varies less than 1/5 percent. Its output will vary 1/100 percent. Available for operation at 17.5-volt power source, unit has recommended maximum period of 1000 hr. Ratings are protected from direct by thermistors. Concerning construction of instrument, the British firm says:

"The light alloy plated in which the motor is assembled is cut in two light sections which helps to solve the problem of fitting the largest possible gears within the available space—the larger the gear the slower it needs to rotate, the easier it is to govern such ratios, and the less wear there is on the bearings and brushes."

Equipment is suitable for testing power up to 1200 psi, down to 12 psi, speeds varying from 0.00001 to 30, with allowable overload of 75 lb. DC motor provided with speed can be used to make power speed checks.

Already ordered by one major carrier, KLM Royal Dutch Air Lines, stand is arranged with working surface to operator's left side and all controls within easy reach. Its features will in-

struction, large pump, two flow control and cooling line and high flow, remote control for maximum pressure setting. Two adapter plates are for hydraulic, and other adapter plates and splice device are optional.

Hydraulic system includes 30 psi pressure, overpressure pump, filter and relief valve for protection of all members of system. Various pump units which can be made with steel include bronze, nonferrous cast, capacity, power input, metal housing, and fuel line.

Reciprocating Saw

For use in aircraft plants and food-bone operations, special gun type unit, introduced by J. Jones, Inc., 6015 N. 16th St., Minneapolis 1, Minn., is

Represented to offer advantages in welding production, quality and costs, two new, all electronic, high-speed or surface welding control units, offered by Westinghouse Electric Corp., Pittsburgh, Pa., have no moving parts in power and control circuit, except in motor and solenoid relays.

Three control panels consist of plug-in sections (the firing panel) (the arc suppression unit) or back-control firing panel (for synchronous work). Control includes sequence work timer, which, controls sequence time, weld time, hold time and allows for single or pulse operation. Equipment gives order non-synchronous timing with repeat and non-repeat control.

Substitution of process variations proved for 5.8-seconds weld time, providing maximum precision control when best control panel is used.

British Instrument

Electron beam and slip (steel) indicator, offered by R. B. Pollock & Co., Great West Rd., Brentford, Middlesex, England, is stated to be only instrument of this type approved for installation in British military aircraft, including jet planes.

Instrument reportedly requires slight oil divergence from straight Right Accuracy is attributed, in part, to close control of input rate speed which varies less than 1/5 percent. Its output will vary 1/100 percent. Available for operation at 17.5-volt power source, unit has recommended maximum period of 1000 hr. Ratings are protected from direct by thermistors. Concerning construction of instrument, the British firm says:

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Already ordered by one major carrier, KLM Royal Dutch Air Lines, stand is arranged with working surface to operator's left side and all controls within easy reach. Its features will in-



designed to cut through any material from rubber to stainless steel.

With blade stroke which can be adjusted from 0 to 2 in., device can be driven by drill motor, or drill or flexible shaft. Slicing speed also can be set for best cutting of particular material. To eliminate whipping a snap ring, steel center equipped with three chisel-like blades to accommodate blade widths of 3, 4, and 5 in. Guide also can be used in "right" in following cutting line.

Unit will revolve 360 deg and lock in any cutting angle. It has handle which can be moved in any position to ease operator arm fatigue.

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Only 25 years of die-making activity in the stamping industry



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PRODUCTION



PRINCE: hopes to see production 5-10 place Prince production.

Prince Gets Rugged Proving

British give Percival feederliner still long-distance flight tests in various climates. Craft ordered by Royal Navy.

Percival Aircraft, Ltd. has received orders for an introductory number of a modification of the company's new twin engine, high wing 510 place Prince, compact from the British Ministry of Supply. The planes will be used by the Royal Navy for training and common utility purposes.

An aerial survey version of the craft was shown at the past SBAC display and other modifications available for use in agriculture, executive type, freight, and military purposes.

■ **Sent On Tour**—The first three craft have recently returned to the factory after undergoing special proving flights in various parts of the world.

One made a 25,000 mi. tour around Europe, doing which it has passed through British Air Registration Board tests in various changes of climate at different heights and temperatures. The plane logged 170 hr. and was sprayed from airports such as Khartoum, Nairobi, Johannesburg and Accra.

Another Prince was flown under normal winter conditions. Bumpy trials were through Europe, via Holland, Switzerland, Italy and Turkey, and then on to Bombay via Lebanon, Iraq and Pakistan.

In the trip, the 1030 mi. flight from Karachi to Baghdad was given in 101 hr. Several demonstrations were made, and the plane was tested under different tropical conditions.

An experienced pilot from Percival's resident company, Hastings, Air Travel Ltd., flew the Prince to advise on the operator's point of view. Company claims that pilot and passengers were

impressed with the comfort of the cabin under the hush of weather conditions. This is attributed primarily to the high-wing which shields the windows.

■ **Tests At Home**—The first two models were shown at the past SBAC display. The first model of VMA built in England. Severely modified engine models were made, also twin-engine models having and constant rpm tests. A brake development program was carried out and optimum loading for the plane was found and protected.

Perival reports that it has now 530 hr. of flight experience on the new Prince. The aircraft is now being flown off the coast, and that single engine performance with full load proved exceptional in hot weather and at high altitudes.

Dutch Put Brakes On Plane Industry

(McGraw Hill World News)

Amsterdam—The obligatory closing down of Fokker Aircraft's construction department (Aviation Week, Nov. 7) and the withdrawal of Government funds from the National Aeronautics Laboratory is considered here a delicate blow to the entire Dutch aircraft industry.

Fokker will have to confine them to their own work, and in contrast to the case of the British industry, if the Government's decision had been known at an earlier date the company could certainly not have decided to

move to London, 1000 miles from Schiphol Airport.

The Government is in a position to bring pressure to bear on Fokker because it must part of the company's capital. (During the war a large number of shares had fallen into Nieuwland, who were subsequently confiscated by the Government.) Furthermore, in stopping the large planned expansion of the National Aeronautics Laboratory at Amsterdam, the Government was able to put a brake on any too ambitious construction plans.

■ **For Risk**—The Government's decision not to subsidize an independent Dutch aircraft industry may be reflected by KLM's activities with American aircraft. It is probably also prompted by the fact that development of an entirely new Dutch plane will involve huge expenditures without the certainty of its proving off.

It is also stated that tests of the "Fokker" (the small bomber aircraft) and of the transport S-6, S-12, and S-13 have not fully come up to expectations.

The Dutch Government once again, despite ambitious industrial schemes, considered the situation of an aircraft industry too great a risk.

U. S. Jet Transport Policy Being Formed

Policy makers of leading transport aircraft manufacturers are getting together a statement on proposals for federal aid to developing transport planes.

Engineers, legal experts and public relations advisers all are throwing their suggestions into the policy pot now being stirred in the U.S. jet transport aircraft which is due to take flight later in the month, says the Aircraft Industry Association, based of course in Washington, D.C. It is probably won't be the light of public announcements however until it is presented before Congress in January.

■ **Engineers Meet**—A Los Angeles meeting of West Coast aircraft engineers last week, was to outline areas to be considered in a longer session of East and West Coast manufacturers' engineers set for Nov. 15. Principal participating companies are Douglas, Lockheed, Consolidated-Vought, Northrop, Martin, Curtiss-Wright, Republic and Fairchild.

Meanwhile another policy statement on the same subject developed by the Department of Defense, and originally scheduled for release Nov. 1, probably will not be made public under its revised schedule, said Perrygo. It had originally been planned for presentation during the last session of Congress.

■ **For Manufacturers**—Manufacturers are

seen between a desire to get prompt action on financing for jet transports and a desire of administration of such development program by federal government "backwards." Rapid progress made by the British aircraft industry in developing transport and transport equipment, has been seen accelerating jet transport development in the country.

Completing the picture further is the rapidly competitive situation among the several potential transport builders in this country, and their relative size tables for development of new jet transports.

■ **Lockheed Already**—Some informed observers say that Lockheed is farthest advanced on transport transport development, although competitors of competing General 240 and Martin 242 transports to transport power based is also in the cards as soon as Allison can get its T-56 transport released for civil use.

Bid Information

An Material Command Procurement Division notice available to Aviation Week the latest AMC bid awards, based below reports for bid information, dated and referred to Contracting Office, AMC, Wright Patterson AFB, Dayton, Ohio at revision MCFFP572.

AIRPORTS

1-10-57 (revision 10-10-57)
1-10-57 (revision 10-10-57), to a bid of \$110,000.
For the construction of airports, 1-10-57, to a bid of \$110,000.
1-10-57 (revision 10-10-57), to a bid of \$110,000.

1-10-57 (revision 10-10-57), to a bid of \$110,000.
1-10-57 (revision 10-10-57), to a bid of \$110,000.
1-10-57 (revision 10-10-57), to a bid of \$110,000.

1-10-57 (revision 10-10-57), to a bid of \$110,000.
1-10-57 (revision 10-10-57), to a bid of \$110,000.
1-10-57 (revision 10-10-57), to a bid of \$110,000.

PRODUCTION BRIEFING

■ **Public Alternative Corp.** showed sales of \$1,100,000 for the same month ended Aug. 12, 1949, \$948,700 above the amount billed for the same period a year ago. Unaudited figures for the period indicated a loss of approximately \$13,800 for the year to date, compared with a loss of nearly \$90,000 in the mid-

dle of the year in 1949. PAC has completed negotiations for a five-year lease with Lockheed Air Terminal for both the new airport by the Aircraft Division in Bedford.

■ **General Electric Co.**'s Westinghouse, N.Y. plant, currently employs 500. Plant has a contract to manufacture fuel control systems for 12 F-46 F-46s.

■ **Solar Aircraft Co.** reports new orders totaling \$2,100,000 received in the last 30 days for turbofans for jet engines, and jet engine parts. Orders are in transit between order a San Diego and San Diego plant.

■ **Wheeler Aircraft Division** of Wheeler

Corporation, a Boston Co., Inc. has received a production order for 214 plus and regular parts from Fairchild for its production in the C-119B "Wheeler" (the Wheeler) which will be used by TWA on its new fleet of Convair 440s.

■ **Globe Corp.**'s Aircraft Division has received a Navy production contract for 1000 plus and regular parts from Fairchild for its production in the C-119B "Wheeler" (the Wheeler) which will be used by TWA on its new fleet of Convair 440s.

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by after takeoff the right engine failed to produce enough power. Soon afterwards, Bruden told he heard the tower of his engine trouble, and when he landing instructions without delay during an emergency.

The Bulletin stated that the tower at first failed to answer, but after the P-35 made a turn over the station the tower cleared him to land "number two on runway three." Shortly thereafter, Bruden said, he saw a two-engine plane with two radars "probably a C-45 (Boeing) or C-46 (Lockheed Industries)" land and assumed it was the ship he was to follow in.

Then, the P-35 pilot continued, he turned for a final approach, got a clearance from the tower to land, and started down. From then on until the crash, all Bruden said he heard was the tower telling it, nobody in particular, "other than the pilot."

• **Tower Version**—The CAA postal tower operator asserted that Bruden was told specifically that he was cleared to land number two behind a DC-4 and that the Lockheed reconnaissance mission. The operator explained the P-35 to make a turn around the field but instead, he declared, the fighter started a steep climb.

When the P-35 was seen to be clearing rapidly with the DC-4 Bruden was told to make a 360 degree turn, the tower operator declared. The Bulletin did not report. He was told to turn left and again did not answer.

Then the DC-4 was instructed to make a left turn just as it started to complete it was hit by the P-35 on the left side just above the upper fuselage of the emergency exit.

• **Bruden's Version**—The traffic controller said it was possible that highly unlikely—that he pressed the wrong microphone key so that he would be on the wrong frequency to talk to Bruden, who was not on the same channel as the DC-4. He denied that any C-45 or C-60 had landed between the time the P-35 took off and the time of the crash.

As the P-35 took off, Bruden said, he saw a two-engine plane land on the field just shortly before the accident. Bruden said it was unlikely that he could have mistaken the P-35 for a C-45 or C-60, even though the latter was two-engine and two-crewed.

• **Test Fuel**—In seeking his cause, Bruden said he was told by the tower that the P-35 was not to land on the field but to make a turn around the field. The Bulletin also failed to tell in other engines, adding 57 on CAA Air Regulations, 33 on emergency and 65 on aerobically. Facing such was 70.

Despite the falling grades, CAA gave Bruden a limited pilot's certificate on the basis of international reciprocity.

Autopilot Status

With modifications pending on electronic equipment (Aviation Week, Nov. 14), it is the current status of the proposed air line involved.

• **KLM**—The Boeing proposed modifications, but few, if any, P-35s are yet built, in operation.

• **Pan American**—In making the Boeing modifications on its 749 Constellation, the system in particular will clear up the difficulty in awaiting completion of tests on the A-15 in the States, but it is waiting along the lines of the C-45 or C-60.

• **American**—Will follow PAA's course in A-15's States, but it is no hurry to re-evaluate the autopilot in either the States or the C-45. Plans to solve via of another electronic instrument.

• **United**—Checking risk factor on electronic only, but no relief slightly the seven years in electronic circuit.

• **Northwest**—Using system to lower crew time in all three circuits.

• **Air France**—Will re-evaluate the P-35 after the Boeing-proposed modifications are made.

The Bulletin held a commercial license to his own country and had flown about 3500 h, including 500 in P-35.

• **Violations**—The CAA stated that a week before the accident Bruden, in direct violation of CAA warnings, had flown a single-engine Boeing aircraft which was not considered in emergency condition and was not properly registered.

The P-35 involved in the crash had flown about 12 hours. It had participated in the 1945 Bruden-Cross-Country Race from New York, Calif., to Cleveland, being forced out of the contest at Toledo when the right engine failed.

ALPA Hits Probe Procedure

The Air Line Pilots Assn. has filed the CAA's investigation Bruden's conduct of the recent safety investigation into the Nov. 1 crash of an Eastern Air Lines DC-4 and a P-35 near Washington, D.C., on Nov. 14.

President David L. Bruden said ALPA withdrew its representatives from the hearing when CAA told them that they would be treated with respect to the

statements they could place in the record and recommendations they could make. "They, despite their failure of having officers to call or witnesses any of the pilots' or safety representatives who served on the investigating team, reduced the pilots' part in a 'mysterious' fatality," Bruden said.

• **John Rogers**—After the ALPA walk-out, CAA member Harold A. Jones, senior adviser to the hearing, declared that the Board of Inquiry would be glad to place in the record all relevant material or recommendations dealing with the investigation. But he added that the public must be satisfied to the specific accident at issue, as the inquiry would become a place for arguments, charges and counter charges.

ALPA and other member airlines involving scheduled airlines had earned 108 deaths in recent years. As a consequence, the union planned to submit their recommendations to CAA.

• **Separation of military and private planes** from air traffic at airports and how to be scheduled on current concept where no other fields are available in the area.

• **Distinctive markings** for all airlines should be made mandatory at the earliest possible time to prevent further collisions.

• **A system of identifying** by code the flashing lights of all airline planes carrying passengers should be studied. Other efforts, in accordance with proper review in the Civil Air Regulations, would give each airline right of way at all times.

• **Electronic radio** member airlines radio telephone planning.

• **CAA should be authorized** to establish a policy for apportioning airport traffic control personnel from airports of low-density traffic to high-density traffic.

• **Radio equipment** capable of maintaining two-way communications on a common frequency should be required on all aircraft operating in and out of major airports.

• **Radio to a minimum time** required to accomplish present complicated approach and departure procedures.

• **Recording equipment** should be mandatory in all cockpit cabins.

Progress Told in Traffic Control Aids

Making its first public review of its first year's work, the Air Navigation Development Board outlined its progress with three important phases of traffic control equipment.

Robert H. Hanson, chairman of the

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port auxiliary group, and develop-
ment of airport time allocation
equipment has been assigned to the Civil
Aeronautics Administration, which will
work on the project at its Indianapolis
technical center. This automatic device
will reduce daylight delays such as stand-
ing by morning landing time reservations
for transport at their destinations.

Airport arrival departure equipment
will be developed by the Air Force at its
Wallops Laboratories in Red Bank, N. J.
This equipment will help controllers
regulate traffic on runways and taxiways
during periods of low visibility.

Development of a radar ground-in-
tegration display system has been as-
signed to the Navy's Bureau of Aero-
nautics and Bureau of Ships. This
transportation secondary radar system will
permit traffic controllers to determine
an aircraft's identity, height and loca-
tion.

Demonstration would require from
two to five years to place the device in
general operation.

Evaluation Program—Besides spear-
heading development of new equipment,
ANDR has set up a program for evalu-
ating existing or partly-developed de-
vices to determine whether they satisfy
the operational requirements of the
common military-civil system. Evalua-
tion of navigation aids will be con-
ducted by the Air Force's Air Weather
Flying division at Dayton, O., while
CAA's Indianapolis center will evaluate
traffic control aids.

Although assigning actual develop-
ment work to various government
agencies, the Board also has directly
tasked study contracts. One, just started,
calls for Cornell Aeronautical Labo-
ratory to investigate the probable char-
acteristics of current night flight by
the common system 60 or 115 mph.

Cornell Laboratory also is studying
how airport time allocation equipment
at a number of airports can be in-
tegrated into a network.

Prescription

New study says lines
must give up subsidies
to remain free.

Airlines must give up their position
of special privilege if the U. S. is to
develop a sound and unified transpor-
tation policy aimed at changing the physi-
cal and financial deterioration of all
common carriers.

This view is expressed in a newly-
published Brookings Institution study,
"National Transportation Policy," writ-
ten by Charles E. Dorn and Walter
Owen, who directed the Hoover Com-
mission task force on transportation.

Background is a private economic research
association with headquarters in
Washington, D. C.

Official Integration—The book reas-
sessed establishment of a U. S. Depart-
ment of Transportation headed by a
Secretary with cabinet rank who would
lead toward coordinated development
of the national transportation system.

The department would have five as-
sistant secretaries in charge of others
of water, rail and highway transpor-
tation and civil aviation—also creating
an integrated staff widely exposed in
interior circles.

Responsibilities of the aviation office
would include possession of federal
programs involving domestic and inter-
national air transport, planning, financ-
ing and operation of physical facilities
such as airports and airways, route plan-
ning development and promotion of air
safety. The office would thus have its
major functions from both the Civil
Aeronautics Board and Civil Aeronautics
Administration.

Separate Agency—Outside of the De-
partment of Transportation, a separate
air transport regulatory commission,
reporting directly to Congress, would
be set up, with 10 members appointed
by the President. The independent com-
mission would have charge of regulat-
ing rates and services of air, rail, water,
highway and pipeline carriers.

Dorn and Owen noted that such
institutions have encouraged the airlines
to over-invest the use of their mar-
ket and thus over-grow their facilities.
They argue that Congress must be giv-
ing CAA and CAA power to seize the
interests of commercial aviation with-
out regard to the competitive aspect
of other forms of transportation.

The study concluded that in the light
of foreign air competition it may be
necessary to provide direct government
support for U. S. international airlines.
But it says there is no realistic justification
for subsidizing air transportation.

"Despite their financial difficulties,
the airlines have failed in many in-
stances to adapt measures capable of
withstanding a reasonable degree of econ-
omy," the book states. "Financial gen-
erosity (against bankruptcy) afforded by
the Civil Aeronautics Act undoubtedly
has played an important part in
removing incentives to economy and
efficiency."

Second—The authors suggest that
unless the established airlines move as
quickly as possible toward self-support,
survival of private enterprise in the in-
dustry will be threatened. Self-support,
they declared, not only insures elimi-
nation of direct operating subsidies but
also contribution of a just share toward
the cost of airports and airway facilities.

Dorn and Owen stated study that
needs advanced then the order the
Civil Aeronautics Act as consti-
tuted.

way, CAA, they noted, has not suc-
ceeded in preventing development of
excessive air transport capacity or in
insuring a balanced corporate and oper-
ating situation for the industry.

This situation, the authors claim,
arises from both "the crowding effects
of subsidy" and a defective control sys-
tem, whereby CAA is unable to protect
the carrier's right to add subsidies,
equipment and facilities.

Foster Lines—The Brookings Insti-
tution study describes the foster experi-
ment as a fundamental and highly-
expensive error.

"The true competitive role of short-
haul air transportation cannot be de-

termined by offering the shipper or
traveler a choice between a heavily-subsidized new service and established (but
fact) carriers that must charge rates re-
flecting their economic cost. Such an
experiment can only emphasize the ob-
vious—that other aspects of service
being equal, traffic will be diverted from
the self-supporting to the subsidized
carrier."

Turning to airport development, the
book says that federal aid will be limited
to a system of fields designated as being
of primary national interest. "It appears
doubtful that the federal government
should concern itself with financing
small airports used by private planes."

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Senator vs. CAB

Board, pleading lack of funds, turns down two jobs Johnson requests.

Separation of airlines from the industry's monetary and pay has become an increasingly thorny issue as Capitol Hill eyes though Congress has prior bills.

Congressional cuts in the Civil Aeronautics Board's fiscal 1950 appropriation have made it impossible for that agency to use any of its employees full time in research into the feasibility of separating service and rates from industry.

That's what CAB Chairman Joseph J. O'Connor, Jr., recently told Sen. Edwin Johnson (D., Calif.), chairman of the Senate Interstate and Foreign Commerce Committee. The committee then explained the New York accounting firm of Ernst & Ernst to make the study, and Sen. Johnson asked O'Connor for CAB's full cooperation in the work.

People and Finance-O'Connor said the budget cut had forced CAB to cut its personnel from 671 last June to a current total of 646, whereas the President had asked Congress for sufficient

funds for 707 Board employees. CAB also had to prevent its two frequent aircraft and flight single-engine planes which are used by safety associations in their work.

With fewer employees, CAB's work on mail rates and other matters has been slowed, and employees' salaries have been frozen. O'Connor told Sen. Johnson. The Board chairman agreed that the problem of separating mail subsidy from service pay was important, but added that CAB did not regard such separation as a prelude for raising and pay to the airlines.

The Commerce Committee had wanted CAB to undertake the entire separation study, but the Board had declined it could not do so without a specific Congressional directive and a substantial supplemental appropriation for the work.

Ernst & Ernst is expected to make its report early next year.

Another Rebill-O'Connor also turned down Sen. Johnson's request for an advisory to a recent study by M. C. Goodrich in "Annual Salary of Commercial Aviation." The study, appearing in Northwestern University's Journal of Air Law and Commerce, pointed out that air transportation is a thoroughly ununionized industry which may never have any, the effect of government aid.

Goodrich called for a reexamination of federal policy toward the airlines, and official investigations should be made to determine whether legislative commercial aviation is inherently on

profitable under the present competitive system. If his findings are borne out, Goodrich suggested either:
• Designation of a single private carrier for each route pattern, with a consolidation of all existing facilities under control of that company, which would operate as a true public utility, or
• Nationalization of the entire air transport industry.

According to Goodrich, further expansion of the airlines will result in greater losses than less subsidy in the future. He said that with the exception of electrical rates of profit without tolls there has never been a time when the monopolized air carriers as a group could have paid their own way, including their fair proportion of the cost of the federal airports, airports and weather services.

Airlines answered—"This analysis," Goodrich declared, "suggests that government and industry officials may have been serious in attempting the development of a new air transportation system."

Costs increasing as the operation of aircraft and the limited need for transportation at very high speeds appear to provide less free competition with railroads and buses for large volumes of traffic.

Sen. Johnson's request that CAB analyze the Goodrich article, which has been mainly criticized in airline circles, demonstrates the head-on attitude the Commerce Committee chairman has taken recently regarding subsidies.

He was quoted as saying that "CAB can break an alliance or make a crisis out of the expense of American taxpayers. Our committee," he continued, "is trying to work out a subsidy upon how plus so that every nickel of subsidy will have to be justified. That's what CAB does not want."

Air American Opens Own Ticket Offices

Air America has become the first non-aviation passenger carrier to have its own, exclusive ticket offices. It has purchased all assets and facilities of two of the largest non-aviation ticket agencies—Aviation Reservations, Inc., and Aviation Tickets, Inc.

Acquisition was through a stock transfer, and although terms were not announced, the stock involved is estimated to have a cash value of slightly less than \$100,000. Don Rich, who headed both the ticket agencies, has joined Air America as vice president-sales.

Wides Coverage—The move gives the renowned three ticket offices in New York City, two each in Los Angeles, Miami, Chicago and Washington, D. C., and one in San Francisco, Oakland, San



SHEILA LOOKS SOUTH

Pan American-Center Airways' new president, Andrew B. Shaw, has been making an inspection tour of his company's 9600-mile routes in Latin America. He is shown telling Panamanian newspapermen of his plans to extend company-through service to Washington and New York.

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LETTERS

Navy Contracts

I read with interest, in your issue of Oct. 16, the editorial on contracting with public for government contracts.

You will perhaps be interested to learn that all contracts with dollar value as low as \$10,000 entered by the Purchasing Office located at the Aviation Supply Office at Philadelphia are weekly made available to the Press by the Public Relations Office of the Branch, Naval District.

The Purchasing Office is associated with no restriction stemming from the Civil Air Office of Naval District, New Department.

Also, in our last issue is the Aviation Supply Office, we put copies of all tenders. Additionally, we are forwarding these tenders to the public in order to be in accordance with the President's request for it. Additional information along this line can be obtained from Lieutenant Commander Mitchell who is in duty with the Purchasing Division of the Bureau of Supplies and Accounts.

F. L. Herro, Captain, SC USN
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Chief, Landing and Motor's MSB Road,
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Attached is a check for \$5, covering a subscription to the Philadelphia Eagle and Free Research Section, who regularly rely on *Aviation Week* for a digest of the latest news in aviation.

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P. S. A bond of men who include a responsible person to a confidential project recently remarked that he, and indeed, government security clearance for Secret, Top Secret, and Aviation Week material.

Denies Illegality

In reference to your editorial appearing in the Oct. 10, 1949 issue of *Aviation Week*, please be advised that we have discussed the said editorial with our attorneys and have been advised of our legal rights with reference thereto. The substance of your editorial entitled "Still Following For Blackouts" is that New England Air Express, Inc. operated by means of a military type and in violation of existing general regulations. The facts are entirely inconsistent with your conclusion.

The article in question was properly based for a great of our month by New England Air Express, Inc. from State Flight A copy of the said issue was sent

with the Regional Office No. 1 of the Civil Aeronautics Administration, and with the Civil Aeronautics Administration, at Washington, D. C. In addition to that, a Form 1111 was obtained by New England Air Express, Inc. and it was required that the aircraft be examined by the Civil Aeronautics Administration and that there be an operating certificate in its status for the said aircraft in question.

The said aircraft was in the employ of New England Air Express, Inc., all of which being duly noted by the Civil Aeronautics Administration. The aircraft, in all respects, had been subjected to complete examination and approved by the Civil Aeronautics Administration, and was found to be properly able to operate with no other governmental regulations.

Your editorial states that State-Flight was found for technical violation. The reference is a clear one that the aircraft equipment properly tested by New England Air Express, Inc. was also equipment that was in technical violation of the Civil Aeronautics Administration regulations. The foregoing facts clearly demonstrate that the aircraft had been properly checked, registered and approved, and would not have been permitted to be used by New England Air Express, Inc. if it had, in any respect, been defective. As a matter of fact, the Civil Aeronautics Administration, having had knowledge of the fact that the aircraft had been tested from State-Flight, was not concerned in its operation, and the mere fact that it did issue a Form 1111 approval therefore, duly disproves the advice in your editorial.

Under a reference of the said statement appears in the next available issue of your publication, with equal prominence can be seen your editorial of October 10, 1949, so as proposed to take legal action for the purpose of daily as the aviation expense now left by your editorial in reference to the operations of New England Air Express, Inc.

R. R. Chavira, President
New England Air Express, Inc.
Triborough Air Terminal
Triborough, New Jersey

(An reply in *Aviation Week* Nov. 2, 1949, New England Air Express, Inc. has been advised by the Civil Air Office that its right of operation should not be denied for licensing and safety reasons of the Civil Aeronautics Administration.)

More On Rates

I was delighted to find your plain-spoken and courteous editorial "Keep Those Air Show Seats" wherein Bob Wiley of the Boston Herald reports on the low fare paid for the management of the Worcester (Massachusetts) Municipal Airport did not prevent a sale and was as shown.

I am sure that one of the reasons Park put on the type of show was the constant

campaign Bob Wiley has conducted for many years almost single-handedly versus the completely shoddy, dirty painting and building conditions on almost every day. Many years have been a blot on the history of American aviation.

Having been associated with aviation since 1925 personally, I completely subscribe to your statement.

In closing, I would like to say that your writers and editorial reports of aviation events and your beautiful editorial stands as major news, in my opinion contribute greatly to the progress of aviation in the United States. Keep up the good work.

KENNETH FULTON
Director of Public Relations
Tampa World Airlines
Tampa-Louis, Calif.
San Francisco, Calif.

AVIATION WEEK can get behind a campaign to have the National Air Race stage a SLOW RACE, to light planes like the propeller or helicopter of aviation. Race points on the ground differential between high and low speed race, straight in headlongs without any, etc., their final end, and the race would be a total loss. Revise the regulations to improve. The fellow that makes the plane that will do the most of the sheet will be the one that will sell all.

We will get aviation planes out of such programs.
R. M. CHAVIRA
4651 Serrano Beach Blvd.
Serrano Beach, Calif.

Merger Brief

Civil Aeronautics Board public counsel in its communications concerning the PAA-ADA merger showed the word "objectivity" in its brief.

Such a striking attack on the Tripper and PAA is hardly to be expected of public aviation when duty it is to report objectively their feelings as the basis of evidence given in hearings.

In an effort to discredit PAA's own record, public counsel cited letters from PAA officials allegedly admitting that PAA created requests in Mexico, including Latin America at a time when it had a surplus of pilots and equipment. An operations manager of PAA's Western Division at the time of Paul Harbor and the two years following, I know that the maximum number of aircraft hourly and mechanically possible were being operated at that time in Latin America.

The tactics of committee James L. McNamara, Jr. and William H. Kennedy, in denying their belief with reasonable, un-biased opinion, intervention and disclosure into a worthy job of counsel instead by opposing financial interests.

FRANK J. JONES
Hawthorne, E. L., New York



Mr. R. C. Schrader
Vice President
in charge of Operations

Braniff International Airways

"Under the great banner of El Compadre, Braniff has linked the Americas with our Douglas DC-6 Sky-liners equipped with Axelson-built superchargers and drive assemblies. This too Axelson-built equipment on our Douglas DC-6's is important to our maintaining a favorable attitude with safety and comfort for our passengers."


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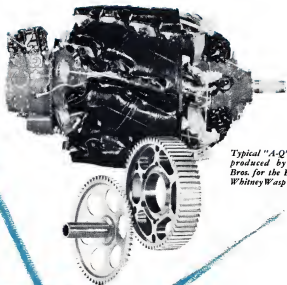
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Landing gear actuator using "A-Q" Gears. Entire assembly produced by Foote Bros. for Boeing B-50.

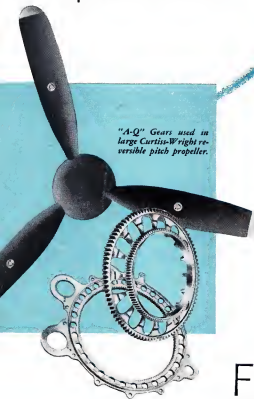


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"A-Q" Gears used in large Curtiss-Wright reversible pitch propeller.

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